

The Milling World

and CHRONICLE
OF THE GRAIN and FLOUR TRADE.

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BURNHAM BROS. IMPROVED STANDARD TURBINE WATER WHEEL.

THE illustrations upon this and the following page represent the Burnham Improved Standard Turbine Water Wheel, details of its construction, and two methods of its application. Figure 1 shows the wheel complete, ready for use, in either an open or decked-topped penstock. The penstocks should be constructed to suit the places in which they are located. This Improved Standard turbine is made one-half higher in the chutes and buckets, discharges one-half more water and yields 50 per cent. more power than last year's Standard turbine of same diameter; and it vents all the water for its diameter that can be used and yield a good percentage with full or part-gate drawn.

Plate No. 2 shows the cover and running wheel removed from the case and gate, so that all parts can be plainly seen. The middle figure shows the running wheel, which is similar to the standard runner. The right-hand figure shows the curb and gate to which the cross is attached. The curb is one casting with recesses inside to let sand pass down between it and the gate; is turned on bottom to fit cross ring, on top to fit cover and inside to fit the outside of gate. The gate is one casting, turned and fitted to curb, and is supported in its proper place by three adjustable segmental brackets, bolted to the top, which rest upon the top of curb. These brackets have brass guide-wheels, which are adjusted to work against the vertical part of cover, when it is turned, and bolted to top of case, so that the gate is opened or closed without rubbing the curb. The left-hand figure shows the cover, which is one casting, turned on bottom to fit top of curb, vertical inside for brass guide wheels, and bored out for eccentric-wheel shaft. The gate is opened and closed by the eccentric wheel working in the yoke on top of gate, which eccentric and yoke, it is now claimed, is the most simple, strongest and most durable device ever invented for operating turbine gates. This device is used on over 2,500 Standard turbines sold the past ten years, and none has given any trouble or required repairs. Plate 3 shows a plan which the makers have

recommended, and which has been adopted by many of their patrons who had mills formerly run by overshot water wheels, and are now using part of the pit-gearing which they had used with their old overshots. By this plan one pair of burrs and machinery can be run by either of the turbines when water is low, or the two pair by both turbines when water is flush. The same gearing arrangement is as well adapted for turbines in outer iron cases as for those in wood penstocks, or for one turbine to drive either one or two pairs of burrs and machin-

ery. When the turbine wheel is placed under the husk of mill, it couples direct to the counter-upright shaft. Where the surface of head water will be two or three feet below the pulley or gear on turbine wheel shaft, the penstock can be made open-top. The gearing to operate the gate or gates

rock foundation, blast it out the depth of standing tail-water, and six inches wider than the outside of penstock, and from two feet above where the wheel sits, to five or six feet below the lower end of penstock; then lay foundation walls or set posts so that the top of bottom frame of penstock will be

be taken when adjusting wheels and machinery to prevent any extra friction on shafts, etc., and particularly so with small wheels, as they run at a very high speed. Very little extra friction on shafts, occasioned by their not being in line, and having the stuffing box and other box too tight, will cause one-fourth to one-half of the power of the wheel to be lost. The forebay should be large enough to keep the water in the penstock at its full height, and prevent agitation of the water entering. A good rack should be put in the forebay to prevent trash from getting into the wheel. As the eccentric wheel can only turn one-half around, there should be on the upper end of extended eccentric wheel shaft a pair of either spur or bevel gears, 5 or 6 to one, so that the hand-wheel will make 2½ or 3 turns to open or close the gate.

The business of Messrs. Burnham Bros. was originally established by Mr. N. F. Burnham somewhere about the year 1856, and was personally conducted by him until Oct. 1, 1881, when he relinquished active participation therein to his sons, who now compose the firm of Burnham Bros. Since Oct. 1, 1881, Mr. N. F. Burnham has devoted his time to the improvement of the Standard turbine, and after many experiments it has been made to run on either a vertical or horizontal shaft, and to discharge a larger amount of water and get a better percentage of power from the water used. This improved turbine, discharging one-half more water, with full gate drawn, yields as great a percentage for the water used as the standard; and when one-half of the water is used which each is capable of discharging at full gate, the gain is claimed to be sixteen per cent. over the standard.

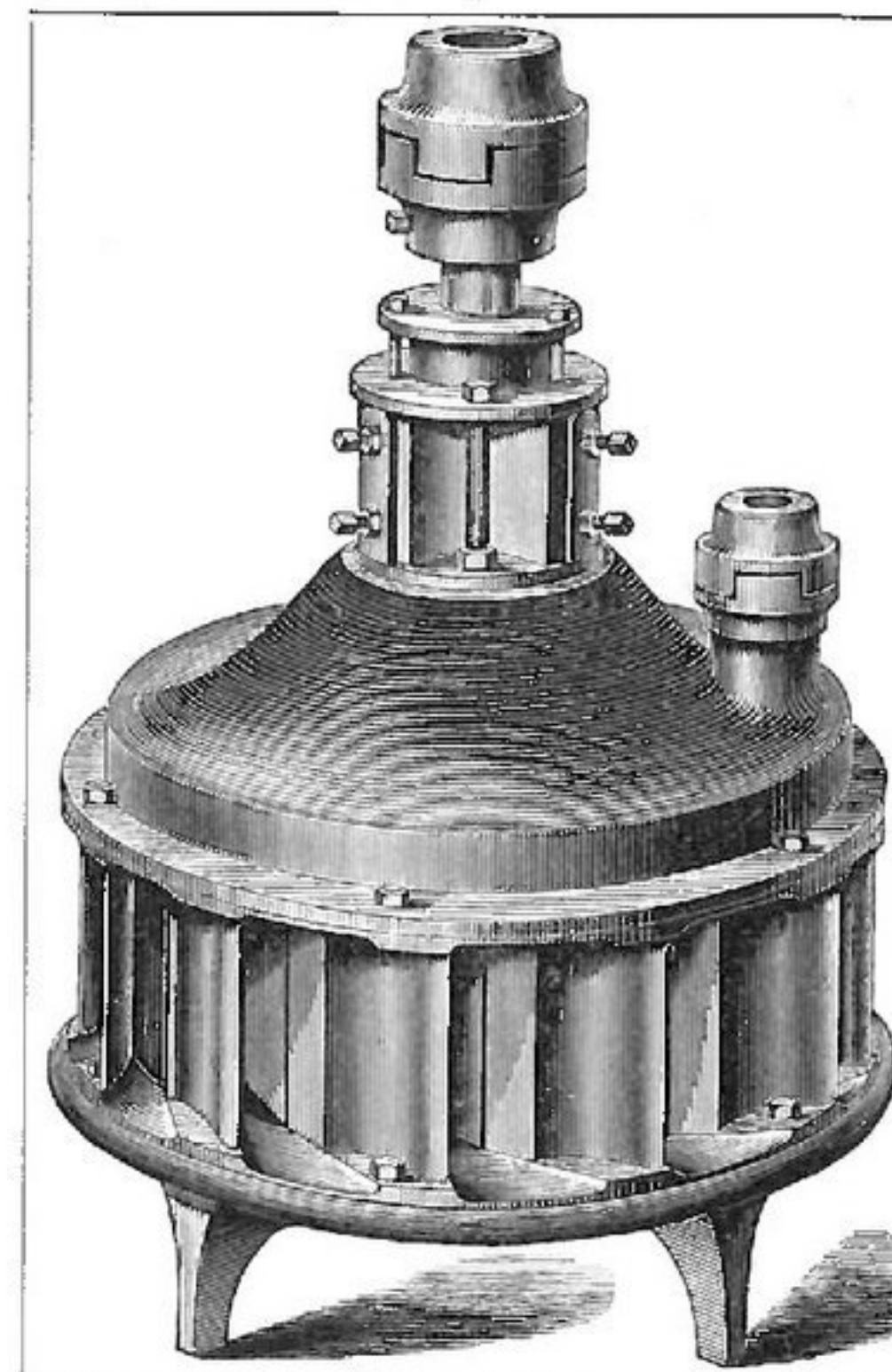


FIG. 1.

can be arranged to suit the location and wish of the miller. When the belt can be run direct from the pulleys on the water wheel shafts to pulley on the spindles, it is preferable to the plan shown; but in many places such a change of gearing would be much more expensive to adopt than this plan.

four inches above the surface of tail-water at low water mark. If ground bottom, dig it out as above directed, except in depth, which would be one foot greater; put down mud sills and plank them over, and lay foundation walls or set posts on it as above directed. Frame a good substantial penstock

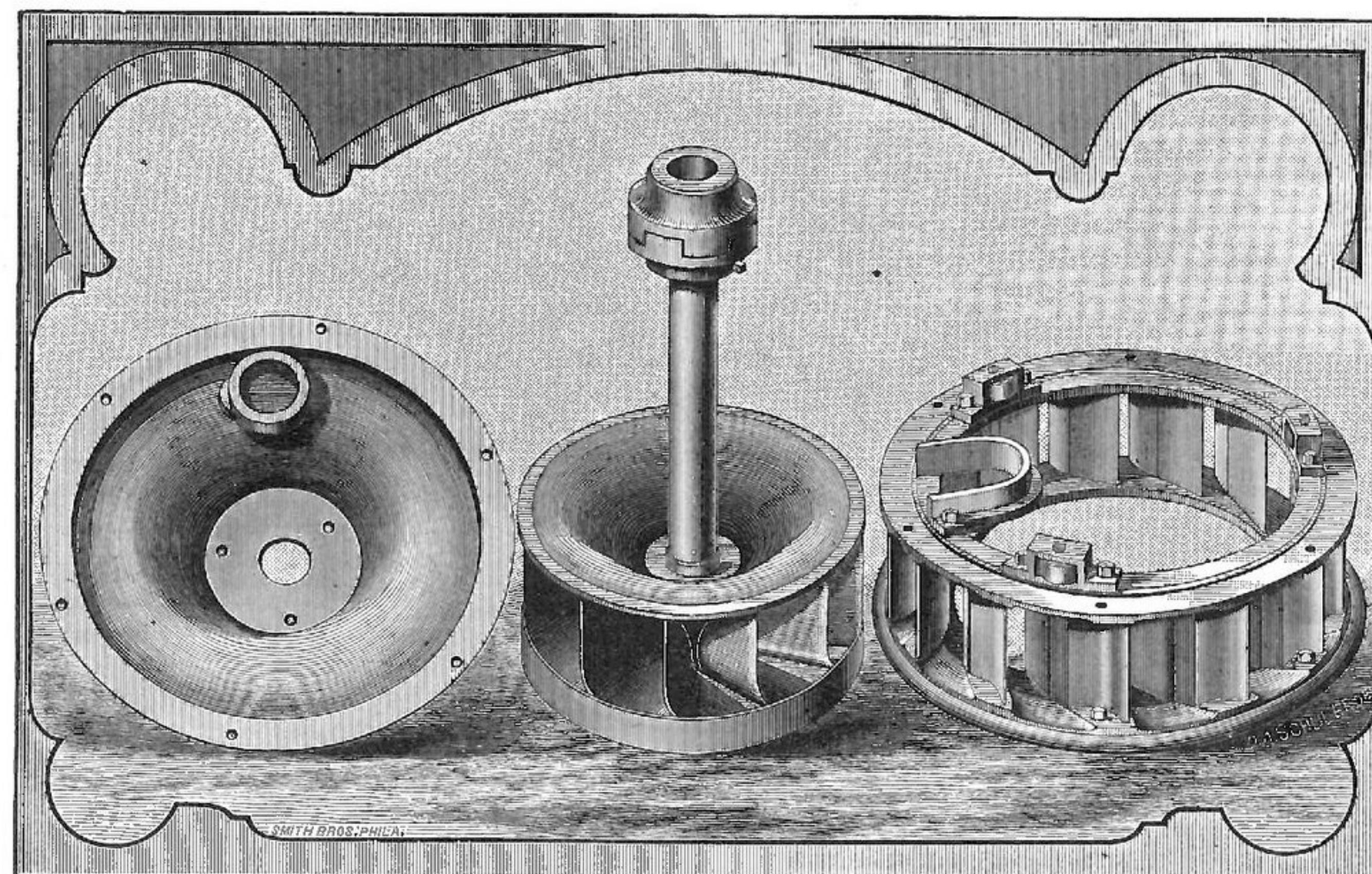


FIG. 2.

Plate 4 (see next page), shows the wheel on horizontal shaft with a ring between it and quarter-turn to bolt to the side of wood penstock, so that the quarter-turn and draft-tube will be on the outside of the penstock and foundation.

The illustrations we present are fair samples of numerous engravings which appear in a new catalogue just issued by Messrs. Burnham Bros., and from which, as appropriate to the present subject, we extract as follows, a few hints for preparing and putting in the Improved Standard wheel. If

of the right size, leaving a square opening in the bottom frame, one inch larger than cylinder or wheel case. Spike pieces in the corners of square opening, to make it eight square; plank the bottom with three inch stuff, and the sides with two inch. Make a round hole in the eight-square one-eighth to one-fourth inch larger than the diameter of cylinder or wheel case. When the wheel is down in the penstock, turn it round so that the gate-shaft will come up in the place desired and cut gains in the edge of round hole for the bridgetree. Care should always

tionately more in the wheat than in the flour, whereas it should be the opposite way. During the first 30 years, beginning with 1830, the export of flour largely exceeded that of wheat, but from that time until now the proportion of wheat and flour has been changed decidedly to the disadvantage of the latter. Thus while in 1860 the proportion between wheat and flour was as one to two, it changed in 1865 to three to two, in 1875 to five to two; in 1878 to nine to two, reaching its lowest limit. Since then the export of flour has slowly increased

FLOUR EXPORTS.

In view of the immense milling industry of the United States, it seems almost strange that the exportation of flour has not progressed as favorably as that of wheat. Although we often hear it stated that with the advances in milling, the demand for American flours has increased in other countries, it has, nevertheless, not kept pace with the demand for grain. This is demonstrated by the most recent statistics about the quantities of wheat and flour exported since 1830. These figures demonstrate very clearly the immense increase of exports in both wheat and flour, but at the same time they show that this increase has been propor-

again in its proportion to wheat. In 1880 it stood as four bushels of wheat for every one bushel of flour; in 1882 about $3\frac{1}{2}$ to one and in 1883 as about $2\frac{1}{2}$ to one. It seems that special efforts are needed on the part of the millers of the United States to regain the main portion of the bread-stuff exports. If formerly the wheat surplus was sent abroad in the form of flour, there does not seem to exist any insurmountable obstacle why the same thing should not be done again now. Even if we cannot send all our surplus of grain to Europe as a manufactured article, the quantity at present is so large, that only a percentage of the whole would employ quite a number of American mills all the year round. The following are the figures to which we have referred:

Year.	Wheat in bushels.	Value. \$112,754	Flour in bushels.	Value. \$24,708,090
1880..	125,547	737,365	28,259,700	29,347,649
1885..	614,145	1,842,841	1,817,067	20,464,660
1840..	1,842,841	1,817,067	20,464,660	27,231,952
1845..	2,946,861	2,900,785	31,373,485	31,056,156
1850..	10,184,645	2,801,093	61,434,140	69,375,741
1855..	16,446,955	21,864,762	65,747,590	75,775,230
1860..	38,808,573	53,943,918	78,891,340	104,368,446
1865..	133,306,907	178,470,444	98,788,665	133,356,876
1870..	81,808,364	117,527,424	57,273,925	92,071,717
1875..	224,019,374	236,540,060	83,878,210	114,398,700
1876..	55,078,182	68,882,899	17,709,804	24,438,470
1877..	40,825,611	47,185,562	15,046,402	21,063,947
1878..	72,404,961	96,872,016	17,762,998	25,005,721
1879..	122,358,986	180,701,709	25,383,713	29,567,713
1880..	153,252,795	190,546,905	27,051,885	35,388,197
1881..	150,885,477	167,698,485	35,756,087	45,047,257
1882..	95,271,802	112,929,718	26,620,587	36,375,055
1883..	106,385,528	119,870,341	41,425,488	54,824,459

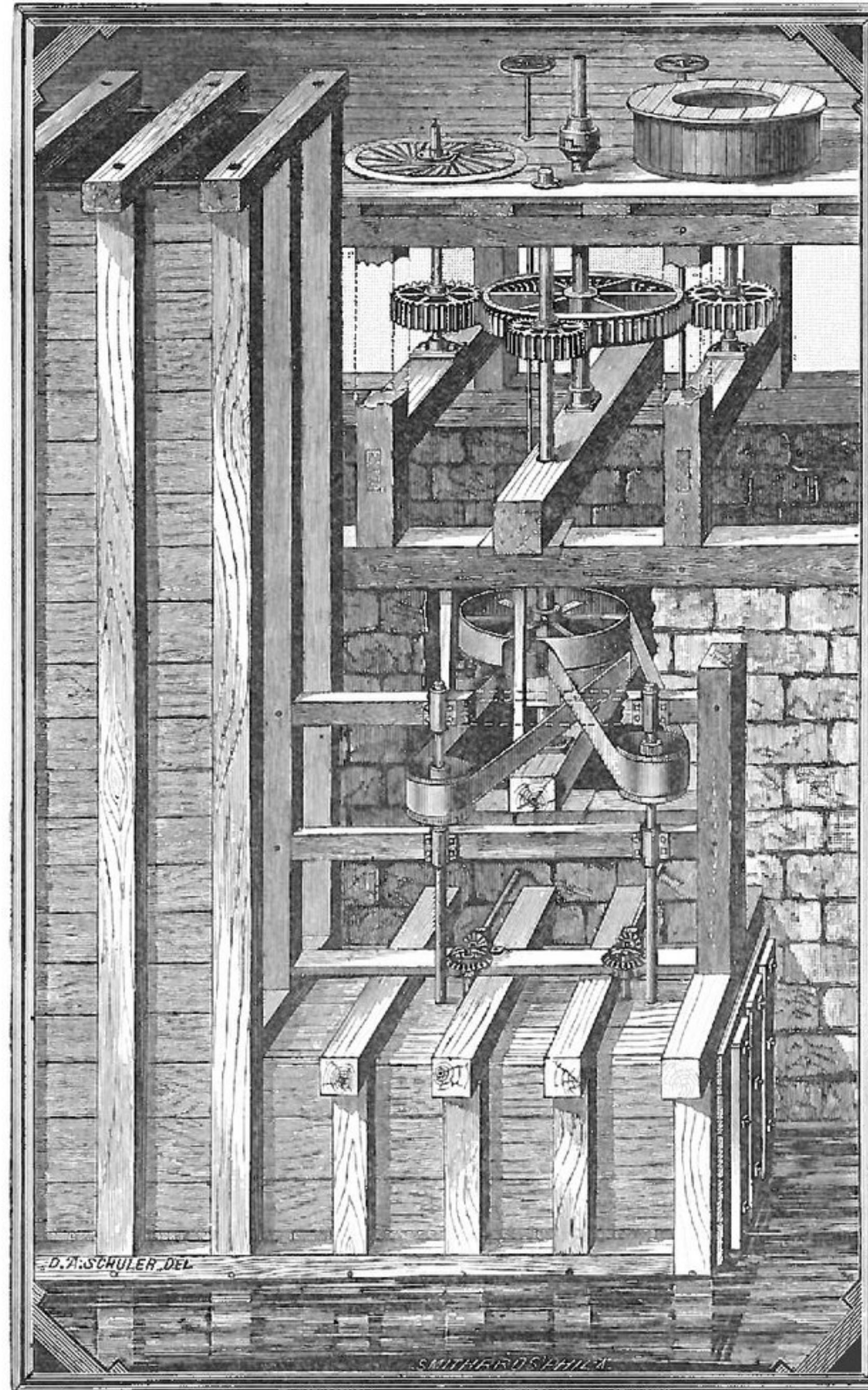
HARD TIMES.

The causes of the present business depression and the decline of prices in the leading commodities of life, have formed a fruitful theme for discussion of late in European as well as American papers. Of course the majority of them look at the question from their own special standpoint, irrespective of the surroundings, and but few are found who can grasp the situation in its entirety and look at the question in its broadest aspect of political economy, irrespective of any preconceived opinion. Some attribute the business depression to the fact that silver is not recognized as the standard of exchange, "consequently," they argue, "the quantity of money as represented by the silver is less than its face value, consequently money is less abundant, consequently business is depressed." Fortunately for the world's commerce, the number of disciples to this doctrine is small, and generally consists of such men as are more or less directly interested in the development of silver mines, or those who have made the silver question their specialty, and who have had their opinions prejudiced by silver. And as one party declares that business depression is caused by a scarcity of money, so other parties claim that the amount of currency in circulation is too large, with a deleterious tendency on the commerce. Both of these parties apparently overlook the fact that business prosperity of a country does not so much depend upon the sum total of all the money that it contains, as upon the number of times that this money changes hands. The accumulated wealth of a few very rich men has not nearly as much influence upon business prosperity, as perhaps one-tenth of such wealth distributed among a large number of manufacturing establishments, employing thousands of people, which again furnish business to hundreds of others in the line of provisions, clothing, and other necessities of life.

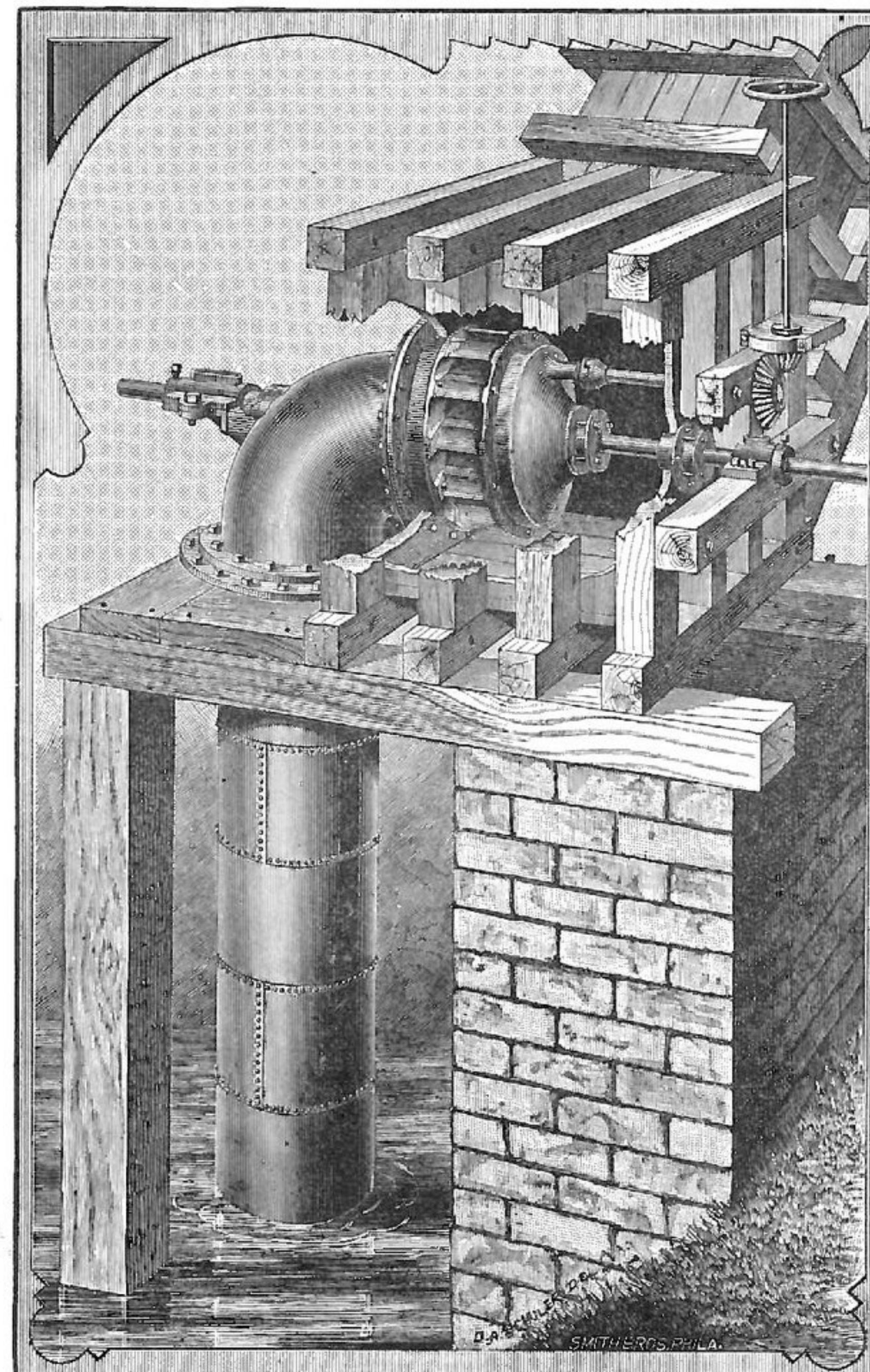
Recent statistics tell us that the prices of many of the necessities of life have diminished considerably in England during the past forty years. The same tendency is demonstrated in Continental Europe, Germany and France, and, writing about the latter country, M. Leroy Beaulieu maintains that the fall in prices is due to four great causes: 1. The opening and development

both of new countries and old countries formerly productive, but since then relapsed into barbarism. 2. The reduction in cost and increase in rapidity of transportation. 3. The increasing abundance of capital in

the civilized world, and, 4. The incessant improvements in machinery. These four



BURNHAM BROS. IMPROVED STANDARD TURBINE WATER WHEEL. FIG. 3.



BURNHAM BROS. IMPROVED STANDARD TURBINE WATER WHEEL. FIG. 4.

into barbarism. 2. The reduction in cost and increase in rapidity of transportation. 3. The increasing abundance of capital in

causes, he claims, are permanent, and are sufficient to demonstrate that, although temporary industrial depressions may come and

go, we cannot again expect the high prices of former times, but will be forced to adjust business to low prices. The fall in the price of grain can easily be accounted for when we consider its production in the light of the above named four factors; the prices of sugar, coffee, petroleum, cotton, wool, iron, steel, have all declined on the same principle. All those commodities which allow of wholesale manufacture are cheaper now than forty years ago, while luxuries and wages have risen in value. How, then, can we apply this knowledge to the question of "hard times." There is no doubt that the laborer of to-day is far better situated in every respect than his fellow of forty years ago. Commerce and industry depend upon the laws of supply and demand, and when the demand is interfered with in some way by an abundance of certain things everywhere, then the industry of that particular branch must suffer. If there is an abundant harvest in all parts of the world, the demand for foodstuffs decreases correspondingly. If on the other hand a war is raging between two nations, the supply to be derived from the hostile countries is cut off, and other nations reap the benefit by supplying the necessities. But even in times of peace the conditions are never stable enough on the face of this earth, to allow constantly a plentifully and equally distributed supply of everything to all countries, consequently commerce has to supply the deficiencies of one from the other. One district is more fortunately situated for manufacturing purposes, the other is better adapted to agriculture or stock raising and the interchange of values, necessitated by such an arrangement, adds to the prosperity of the land. If in one branch or in several branches of industry, a number of improvements in machinery are made rapidly in succession, "hard times" will result to a large number of people who found employment before these improved machines superseded them. But new industries are springing up continually, and the men who lost their work, find again employment at something else, with the result that taken all in all, this world moves, and the conditions of men improve. And the law which thus operates on a small scale in one or the other branch of industry, can be applied to the commercial relations of the different countries as a whole. When there is no demand anywhere for certain products, trade in these products is dull, and will continue so until a demand for them is started. Of course, we do not speak about stock-gambling and speculating, but of legitimate trade. We may look upon "hard times" and "panics" as points to be learned in political economy, and as natural links in the chain of the evolution of the human race. Nature never shows any mercy in any of her departments; with the most supreme indifference plants and animals are swept out of existence who have been unable to adapt themselves to changing conditions; why should man consider himself an exception to this general law? He has to learn to fit his individual self into the varying surroundings as well, if he wants to live comfortably. If he cannot do that, the result is "misery" under different forms.

But as mankind learns by experience, the conditions under which we labor, improve, and the various forms of misery entailed upon the race are modified or disappear entirely. Until the approach of the millennium man will have to suffer hardships, misery, panics, hard times, etc., etc., in this constant struggle for existence, and understanding that, we must try to make the most of it. History teaches us here an important lesson. As long as national calamities were looked upon as "divine visitations," the human race weekly submitted. From the moment, however, that their origin was traced to natural causes, remedies were recommended with the most beneficial effect.

We must admit that in the present light of our knowledge the periodically returning hard times are but the effect of some mismanagement or misunderstanding of our surroundings and the conditions under which the human race has to exist. And as we are yet in the infancy of civilization, and can already trace up such wonderful improvements, we are justified in stating that with a better understanding and increased knowledge, man will learn to control, or adapt himself to, his conditions more and more, with the inevitable result that panics and hard times will first lose their severity and finally disappear altogether.

WHEAT IN INDIA.

The question in how far the supply of Indian wheat on the European market was able to compete with American grains, is of great importance to the agriculturist as well as to the miller of this country. So many statements, discussions and reviews have of late been published in the press that it is a hard task to separate the chaff from the wheat and arrive at some definite conclusions. This work of summarizing the most important and trustworthy statements has been undertaken by *Bradstreet's* with the following conclusions: A review of the evidence which has been thus collected suggests the conclusion that it is as yet too early to pronounce with any approach to definiteness as to the future relative rank of India as a wheat producer. It is to be borne in mind that there are as yet no complete agricultural statistics for India, and that such figures as are forthcoming are based for the most part upon official estimates. According to an estimate recently made by the Indian government, as the result of an investigation undertaken at the request of the home authorities, the area under wheat in British India is about 20,000,000 acres, and that in native territory at about 6,000,000 acres, and the total yield is about 220,000,000 bushels yearly. India was able to export in 1881-82 over 37,000,000 bushels, of which nearly one-half went to Great Britain. The exports of wheat, however, fell off about one-fourth in the year 1882-83.

The question of most interest in regard to Indian wheat production is of course the important one to what extent that production and the consequent export is likely to be increased by the extension of railway accommodations and by improvements in cultivation resulting from better systems of irrigation, etc. Upon this question no very confident conclusion appears to be entertained by those regarded as best qualified to express an opinion. Sir James Caird in giving testimony before a recent sitting of the Parliamentary Railway Committee said, that while he looked to a general increase of a great many Indian products as the result of railway extension, yet that in his opinion the population of India was increasing so rapidly that in two years it would require the whole quantity of wheat now exported, unless there was a much larger production than at present. He thought that the signal progress which had been made in the export of wheat during the last two years was owing to the exceptional seasons which had occurred since the last famine. Whether any great increase was to be expected from improved agriculture in India was, he said, a question the solution of which depended on the price of wheat and the temptation thereby offered to the Indian grower to cultivate it. In many parts of India where the land was good and there was a command of water from rivers or canals or wells, there would undoubtedly be an increase, but the cultivation would not be greatly extended unless the price of wheat became remunerative.

It is evident from recent indications, however, that this question is not to be left in the hazy region of expert conjecture, but

that, on the contrary, every effort will be made to bring it to a practical test under as favorable conditions as possible. The investigations to which we have referred were undertaken at the instance of the home government in England, which doubtless hopes to find her granary of the future in her great Asiatic colony. The Indian governments, general and local, are addressing themselves to the matter with energy, in cooperation with the commercial bodies in the chief cities of the colony. These latter bodies are seeking to secure the adoption of measures intended to improve the quality of Indian wheat by inducing a more careful and systematic cultivation. The Bombay Chamber of Commerce, for instance, has suggested the giving of prizes for the best farmed fields, and the dissemination among the peasantry, to as great an extent as possible, of the knowledge of the advantages to be derived by cultivators from reaping pure and unmixed grains.

The Bombay government, acting upon these suggestions, has instructed the Director of Agriculture to distribute useful information among the producers and intermediate agents who deal with the wheat crop, and to place before them samples of the wheats which are most in demand for export. The Bombay authorities have also arrived at the conclusion that seed of a pure quality should be supplied either free or at a low rate to selected cultivators in the wheat-growing districts, and that small prizes should be awarded for the most approved cultivation. Not the least important assistance rendered by the Indian government to the cultivators is the improvement of the systems of irrigation on which it has for some time been engaged, and which it is gradually but steadily perfecting. Again, in order to facilitate the development of the wheat resources and to facilitate the export trade the Indian government is pursuing a policy of encouragement which, as was shown by Consul-General Mattson's report in December last, has already resulted in better facilities of transit to the seaboard by the construction of new railroads and the reduction of freights, and in the removal of taxes and export and octroi duty. It is plain that nothing will be left undone to place Indian agriculture in as favorable a condition as possible for competition with that of the rest of the world, a fact which the American farmer, who has already felt the effect of Asiatic competition upon the prices of his own product, will do well to take into account.

BANK RESPONSIBILITIES.

The present time, when the financial world has been seriously disturbed by heavy failures, and the eyes of the people are contemplating the gambling of speculators with watchful care, is well chosen for the introduction of the bill into the House of Representatives by Mr. Abram S. Hewitt, of New York, to regulate the responsibility of bank officials. The bill requires that no bank president, or other officer connected with it, shall be allowed to borrow any money from his bank, neither for himself or for others; it furthermore provides that, if any such loan has been made contrary to the law and results in a loss to the bank from which the money is taken, then such officers shall be deemed guilty of embezzlement of the loss, and be subject to a term in prison of not less than one and not more than five years, in addition to a fine equal to the sum of money so embezzled.

That bill should become a law as speedily as possible, and before the popular interest in this matter has had time to subside. The law does not allow any guardian to deal with money entrusted to his care, as he would do with his own. Why bank officials should be viewed in a different light, is an open question; the lax laws in this mat-

ter have not been able to put a check to the speculation with other people's money by bank officials, and severer measures are needed to restore the public confidence in banking corporations. If any person deposits money in a bank, he supposes to have it there at his convenience and subject to his call; nobody places it there for the convenience of the bank officials; the bank is, in such cases, the guardian of the funds entrusted to its keeping and strict laws should be enacted to enforce the most rigid responsibility upon those who have the custody and handling of all such trusts. If such a law can be passed now, the recent heavy failures have not been without a beneficial reaction, and have served a very useful purpose.

IMPORT OF FLOUR INTO GREAT BRITAIN.

The recently published statistics about the total importation of flour into Great Britain for the first quarter of the present year, compare quite favorably with those of other years in spite of the much-spoken-about decline of our exports and the increase of the supply of Indian products. The details are more significant when compared with former years. The figures are given in hundred weights. We find the import from

	1882.	1883.	1884.
Germany.....	385,049	460,093	467,329
France	58,519	42,821	39,323
Austria-Hungary...	367,305	548,787	480,514
United States...	1,581,446	3,051,205	2,649,332
British America ...	887	5,098	3,138
Other countries.....	242,240	179,811	150,604

The total import for 1884 is not as large as that of 1883, but this difference is general and does not apply to any one country alone. As compared with the figures for 1882 the American importation in 1884 has largely increased, in fact more than that of any other country, even if it does show a decline when compared with last year. Moreover, these figures are only for one quarter of the present year, and it seems wrong to make any estimate now, for nobody can tell what the demands may be during the remaining nine months; the indications are already that the importation will increase and it is not at all impossible that the total sum for 1884 will in the end compare very favorably with the preceding years.

SPECIAL NOTICES

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,

Columbus, Ohio.

Office and Factory, 5th Street, north of Naughton.

BUCKWHEAT FLOUR

Always commands a better price, and gives better satisfaction to the consumer when made by the aid of Cransons' Silver Creek Roller Buckwheat Shucker. This is a fact which we can demonstrate to any miller who will write us.

G. S. CRANSON & SON,
Silver Creek, N. Y.

FOR SALE!!

A LINE OF STEVENS ROLLS, of various sizes, either smooth or corrugated, formerly used in the H. D. Rush & Co. Mill, at Leavenworth, Kan. These Rolls have been CONSTRUCTED WITH SPECIAL CARE from the present patterns used by the builders; are refted and as good as new. They will be sold at HALF PRICE.

Also other makes of Rolls, and those wanting anything in this line should not fail to correspond with us.

NORDYKE & MARMON CO.,
INDIANAPOLIS, IND.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1½ cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

WANTED.

Situation as second miller, in a roller mill. Will go anywhere not outside the limits of civilization. References will be furnished upon application. Address B. 78, care THE MILLING WORLD, Buffalo, N. Y. 47

SITUATION WANTED.

In a custom grist or flouring mill by a man who has had about two and one-half years' experience as a miller, and can furnish best of references. Address, T. H. NICHOLAS, Forestville, Chautauqua County, N. Y. 61

WANTED.

Position as head miller. Can take charge of, and satisfactorily handle, a mill of any capacity. Would prefer a roller mill. References as to ability will be furnished. Address B. 65, care THE MILLING WORLD, Buffalo, N. Y. 47

SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or \$1 for four insertions. Cash must accompany the order. When replies are ordered send cars of this office, 10 cents must be added to pay postage.

WANTED AT ONCE.

A good practical miller to run a small custom and merchant mill, rolls and stone. Must be willing to work. Wages \$50 per month and house. Address, ESPENHAIN & ROY, Lyons, N. Y. 6

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One Knox finisher to run with the sun. Must be as good as new. With perforated sheet steel scourer. Give lowest cash price. Address P. H. RAUCH & BRO., Kelly Cross Roads, Union county, Pa. 4

FOR SALE.

The Daggett Hollow Mills. Steam and water power. Four run stone. Rebuilt 1883. Sixty-two acres land. Good buildings and fruit. For particulars address G. W. EIGHMEY, Daggett Mills, Tioga county, Pa. 47

FEED MILL FOR SALE.

A portable iron disk feed mill for sale. Well built, large capacity, and in perfect order; unpacked, delivered from factory. Price, \$40. Address, O. F. F., drawer 203, Buffalo, N. Y.

MILL FOR SALE IN EAST VIRGINIA.

A never-failing water-power flouring and grist mill can be bought at a sacrifice. Unavoidable circumstances forces this property in market. Brick building 44x48. Good investment. For particulars address, C. C. CHAPMAN, Smithfield, Isle of Wight county, Va. 710

FOR SALE.

A roller flouring mill. Rolls put in last winter. Twenty to forty barrels capacity; never-failing water power, 12 ft. head; in good grain country; on Railroad. Dwelling and eleven acres of land. Upright saw mill. Not for rent. Do not write unless you mean business. Address, FREDRICK AMENDT, Pierce Stark county, Ohio. 7

FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, \$350; one 8-horse power engine and 10-horse power boiler, price, \$375; one 10-horse power portable complete, price, \$350; one 10-horse power Russell Traction, price, \$500; one 4-horse power vertical engine, price, \$120. Call or address for particulars EZRA F. LANDIS, Lancaster, Pa. 262

FOR SALE.

Water mill at Whitehall, Tremperham county, Wis. Mill built in 1878. Five run of stone. Mill easily converted into roller mill. Plenty of water all seasons. Good custom trade. Can command trade of Wisconsin Pinery. Home demand for all. Wheat supply from first hands. Mill forty rods from Depot. Side track to mill can be procured. Whitehall is a thriving town and county seat. Good reasons for selling. Address, WHITEHALL MILL CO., Whitehall, Wis. 7tf

YOU CAN BUY THESE CHEAP.

1400 4x8 elevator cups. { made by W. P. Myer, 1300 4½x8½, " { made by Indianapolis, Ind. One No. 8 Excelsior Centrifugal reel. One " J. T. Walter Middlings Purifier. One " 2 Four McCully Corn Cob Crushers.

Each of the above articles is brand new, in perfect condition, just as they left the factories, never having been unboxed, and will be sold very cheap for cash, the owner having changed his plans, has no use for them. Address S., 30 care THE MILLING WORLD, Buffalo, N. Y. tf

VALUABLE MILL PROPERTY.

Roxbury Mill, on Antietam River, for Rent or for Sale on easy terms. This property comprises a most desirable flouring mill in complete order with three run of burrs, excellent and never-failing water power, 23 acres rich land, good two-story dwelling house, situated one mile northeast of Breastedville, on Washington County railroad, and five miles southeast of Hagerstown, and on the road leading from the Hagerstown and Sharpsburg pike to the Hagerstown and Boonsboro pike, in as fine and healthy agricultural district as can be found. A full supply of wheat can always be had by wagons, direct from farmers in the neighborhood. The mill has always had local custom for all the mill feed and much of the flour made. For terms, &c., apply to GEO. T. GAMBRILL & CO., Baltimore, Md., or F. F. McCOMAS, Attorney, Hagerstown, Md. 614



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Card of Rates sent promptly on application. Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

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WHAT OF THE FUTURE?

THE panic of 1873 was brought about, primarily, by the suspension of the then well-known firm of Jay Cooke & Co. The effect of that panic, and the results attending it, were too wide spread and disastrous to be soon forgotten. The recent failures in Wall street, involving very nearly, if not quite, as large sums as the Jay Cooke failure, were, in many quarters, anticipated to result in as wide-spread embarrassment, but such has by no means been the case. It is pertinent to inquire as to the causes which have served to prevent such calamity.

For a period extending back more than two years the press of the country has, at frequent intervals, directed attention to the fact that in many lines of business production was exceeding consumption, and pointed out that a re-adjustment would soon become imperative. These warnings were not wholly devoid of effect, perhaps not so directly upon the producers as upon the consumers, and, as consumption fell off still further, production became more curtailed. It began to be believed that the time to call a halt was approaching, and, so rapidly as possible, production was lessened, credits were scanned with more caution, and outstanding accounts gotten into as small compass and short dates as practicable. When the storm struck Wall street, therefore, its effects were practically confined to such enterprises as were purely speculative or wholly without tangible foundation. For a few days confidence was staggered and all waited for what might next occur, but happily no real disaster to the business interests of the country followed, and the only result thus far apparent has been to increase the feeling of conservatism.

That general business throughout the country is dull must be admitted, but that its condition, or rather that the conditions under which it is being carried on are of a more favorable character than existed six

months or a year ago, will also be as freely admitted. Merchants and manufacturers have had time to adjust their affairs and relations to conform to approaching changes in conditions under which future transactions must be carried on, and solidity is, apparently, rapidly taking the place of insecurity. So much for preparation.

Now a word as to the future. It is by no means unlikely that a new era of speculation will ere long be inaugurated. Every indication points to a bountiful harvest, and in view of the fact that in foreign lands crop prospects are also of a favorable nature, we may reasonably anticipate low prices for our food cereals. This, however, cannot be construed as meaning in all cases less money for the farmer, as his income will be solely regulated by the number of bushels he may have to sell and not by the price per bushel. Low prices for wheat means low prices for flour, but this does not necessarily signify lack of profit for the miller. Cheap flour signifies cheap food for the laboring classes, and as the tendency is toward lower wages for the laborer, cheap food will be a blessing, not only to him, but to the entire community, because it will place it within his power to purchase as freely as when its price, as also the price of his labor, was higher. The great purchasing class will, therefore, we confidently anticipate, continue their expenditures, and, as business revives, which it certainly will, they will increase their expenditures.

Good crops, of which every indication is now present, signify activity for our railroad and other transportation lines; this activity means increased earning, and, in many cases, the resumption of payments of dividends and interest, and we all know what result this will lead to. We have before us a list of thirty-one railroad and other stocks which have been favorably regarded by investors for many years. Subsequent to the panic of 1873 they reached their lowest value in 1876, the average price for that year being 63 1/2. From this they advanced until during the first six months of 1881 the average price was 96 1/4. These stocks and securities were quoted in the New York market on May 28 last at an average price of 60 1/2 or three points below the ruling average during the year 1876. Commenting on this the well known bankers, Henry Clews & Co., in the last issue of their Monthly Financial Circular say: "It will be seen from this comparison that, on an average, prices on the 28th of May were about 3 points below the average of the year 1876, which was the year of lowest quotations following the panic of 1873; and that they were 36 points below the average figures of the first half of 1881, which was the period of culmination of the great rise that set in with the resumption of specie payments. In making this comparison, however, it is to be kept in mind that most of the roads here quoted are now in a much more consolidated and stable condition than they were in 1876, and that, with respect to most of them, their ability to pay dividends has been confirmed by eight years more of experience. It is true some of these roads have recently exhibited a decline in earnings and that in some exceptional instances there may possibly be a temporary reduction in the rate of dividend; these, however, are to be regarded as but transient incidents arising principally from speculative obstructions to the forwarding of produce to the seaboard." With a brisk demand upon these various transportation lines for the carriage of freight is any one ignorant, or in doubt, of the result? Another era of stock speculation will set in, and another boom will be experienced.

The future has, altogether, an attractive hue. High prices will not immediately prevail, but there is every reason to anticipate activity in mercantile and manufacturing circles, and this signifies prosperity.

WE have recently noted the fact that the German Millers' Association had in 1882, offered a prize of \$250.00 for the discovery of a method to determine in a simple manner any adulteration of rye and wheat flours. From twenty-five essays, that of Prof. L. Wittmack, of the Agricultural College at Berlin, was deemed most worthy and the

able results to some ports, the majority will be vastly benefitted. The greatest loss, perhaps, would befall England, because Gibraltar would find itself reduced from its position as "key to the Mediterranean" to a place of minor importance.

INSTEAD of attempting to demonstrate the comparative merits of porcelain and chilled iron rolls by newspaper controversy, would it not be more to the point to institute a comparison as to the relative merits of chilled iron rolls, particularly with a view to showing the durability of construction, ease and accuracy of adjustment, power consumed in their operation, etc., etc.? We don't think such a comparison would demonstrate anything in particular, except to incline builders and users of rolls more strongly in favor of their specific possessions, but it would certainly be received with more interest by the milling fraternity. It is quite possible to show the superiority of porcelain over chilled iron rolls, and *vice versa*, so that discussion of the subject possesses little interest and no value.

THE wholesale and indiscriminate destruction of the Australian forests seems to bear its fruits. We are told that on the famous Darling Downs, in Queensland, no rain except a passing shower has fallen for seventeen months. As this district is celebrated as a sheep range, the damage done is very serious, and fifty per cent. of the stock has died. It is estimated that 8,000,000 sheep have been killed by the drouth all over Australia before the needed rain ended the suffering. Large rivers were reduced to a chain of ponds filled with stagnant water unfit to be used by either man or beast, while further inland both rivers and tributaries disappeared entirely. Water was obtained only by digging deep wells.

THE Westinghouse Machine Company, of Pittsburgh, Pa., may safely be regarded as an example of what enterprise and liberal advertising, combined with absolute merit in the article offered for sale, can accomplish. The record of their sales for February, March and April, which is elsewhere presented, plainly evidences the wide extent of the demand for their Westinghouse automatic engines, and the numerous instances given of second, third and fourth orders, unmistakably demonstrate satisfaction upon the part of purchasers. These engines are made in sizes ranging from 4 to 160 horsepower, and we note are finding favor with millers.

WOULD Secretary Seamans, or some member of the sub-executive committee, relieve an anxious public by intimating whether the proposed test of bran-packers goes over to December next with the annual convention? The Jebb matter is in competent hands, and will take care of itself, but if twenty or more inventors are compelled to live on for an indefinite period, upon simply a prospect of obtaining that \$1,000 prize, the butcher or baker who may be extending credit to nineteen of these inventors, will, in all probability, be badly left.

THIS is a particularly favorable time for millers to buy machinery, because competition between manufacturers is quite brisk, and the miller is sure to get the benefit of it.

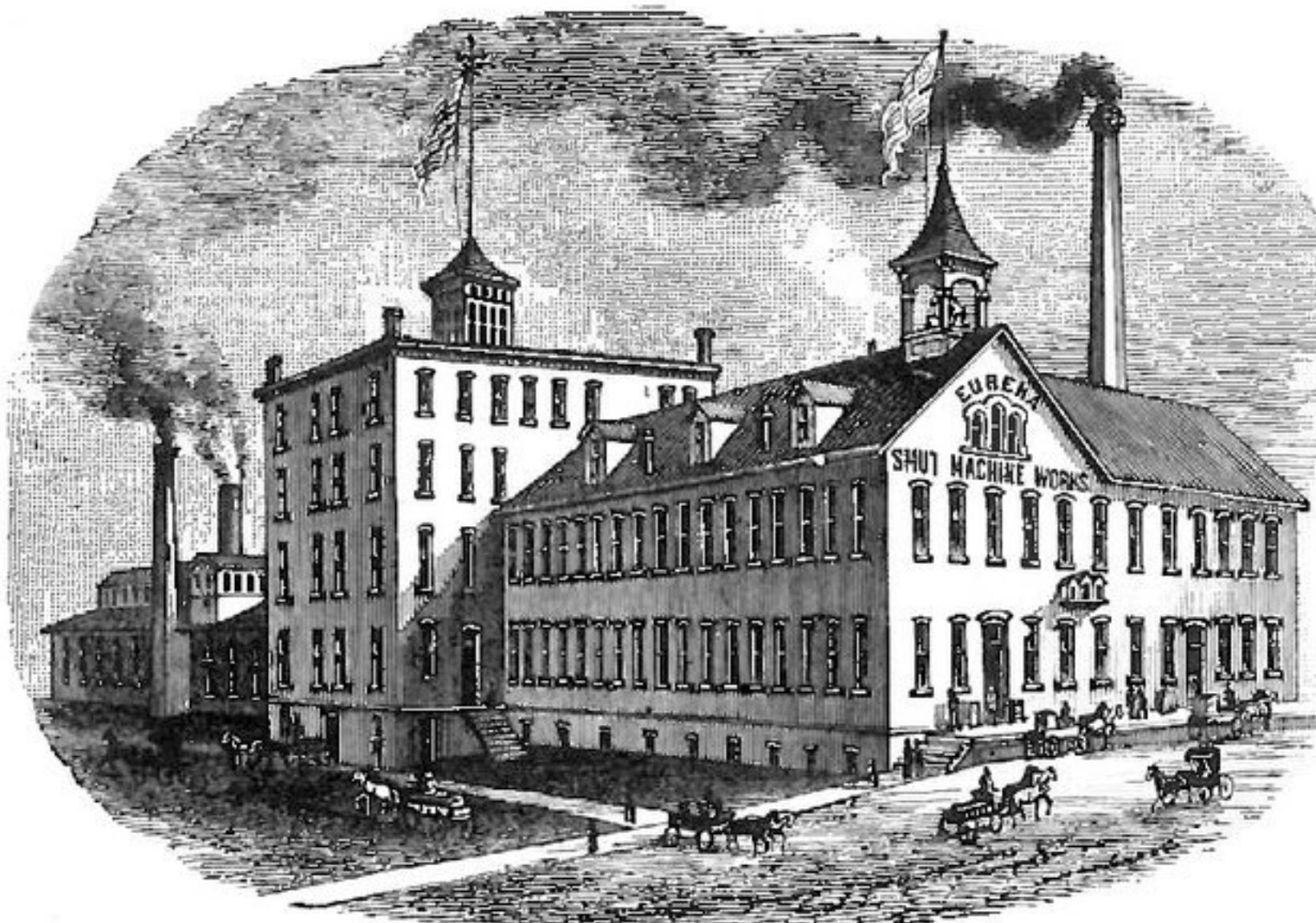
ONCE more we ask who are the prominent millers that make up the committee which is to determine the validity of the Gilbert patent?

THERE used to be some talk of suits between manufacturers of roller mills. Has the "sand" all given out?

ESTABLISHED 1856.

EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH**OVER 18,000 MACHINES IN USE.**

OUR LINE COMPRISSES

*The Eureka Separator,**The Eureka Smutter and Separator,**Eureka Brush Finisher,**The Eureka Magnetic Automatic Separator,*
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SILVER CREEK, N. Y.European Warehouse Gen. Agency for Australian Colonies and New Zealand.
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We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

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Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

Send For Samples of Cloth, Our Style of Making Up, and Prices.

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THE IMPROVED MORSE ELEVATOR BOLT**THE KNICKERBOCKER CO.**

MILWAUKEE, WIS., March 20, 1884.

Gents: Your Bolt is working well and beats anything in the way of a Bolt, centrifugal or any other, that has yet been invented. As a general thing we do not like to certify to a thing on so short a notice, but your machine is an exception. We will experiment as we have opportunity and see how many more machines we can profitably use. Wishing you all success, we remain,

Your truly,

E. SANDERSON & CO.

THE KNICKERBOCKER CO.

JANESVILLE, WIS., April 9, 1884.

Gents: I am fully satisfied with your Morse Elevator Bolt, it is a wonderful machine, and is as far ahead of the old Bolting Chest of Reels as the roller process is ahead of stone milling. Enclosed find draft for the No. 1 sent me, please forward the two No. 1 Bolts bought of your agent, one is for bolting patent stock, and the other low grade stock.

Yours Truly,

C. W. HODSON.

THE KNICKERBOCKER CO.

CLEVELAND, OHIO, April 3, 1884.

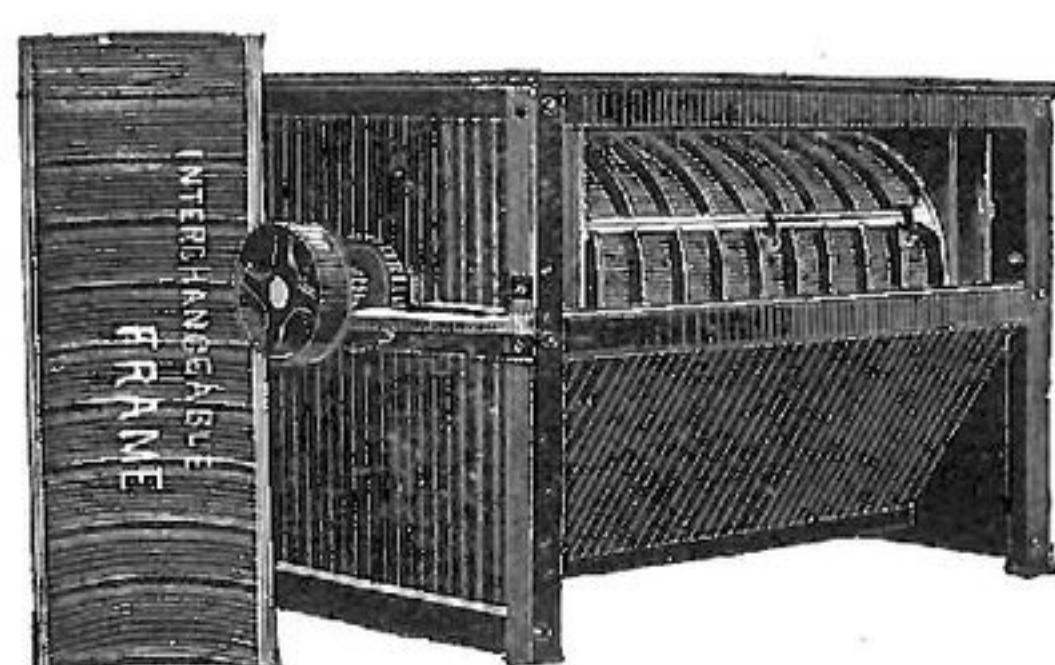
Dear Sirs: Regarding the Morse Bolt we cannot say enough in its praise. We have three different makes of Centrifugal Reels in our mill, and having given the Morse Bolt a fair trial alongside of them we can certify as to their merits. We have demonstrated the Morse Bolt will handle double the quantity the Centrifugal will and produce a better flour and cleaner finish. In fact any material in the mill can be handled with more economy and better results than upon any system we know of. The Morse Bolt being under the complete control of the operator is a point in its favor that cannot be over-estimated, and we believe when its merits are more widely known it will supercede the present mode of bolting.

Yours respectfully,

M. C. DOW & CO.

The Knickerbocker Co., Jackson, Mich.**EXCELSIOR CENTRIFUGAL FLOUR BOLTS**

FRANK ANDREE'S PATENTS, awarded Blue Ribbon and a Diploma of Merit at St. Louis Fair, Oct. 5, 1882.

Crowned With Success!

Our No. 1 Stationary Double Reel!

Our No. 2 Stationary Single Reel!

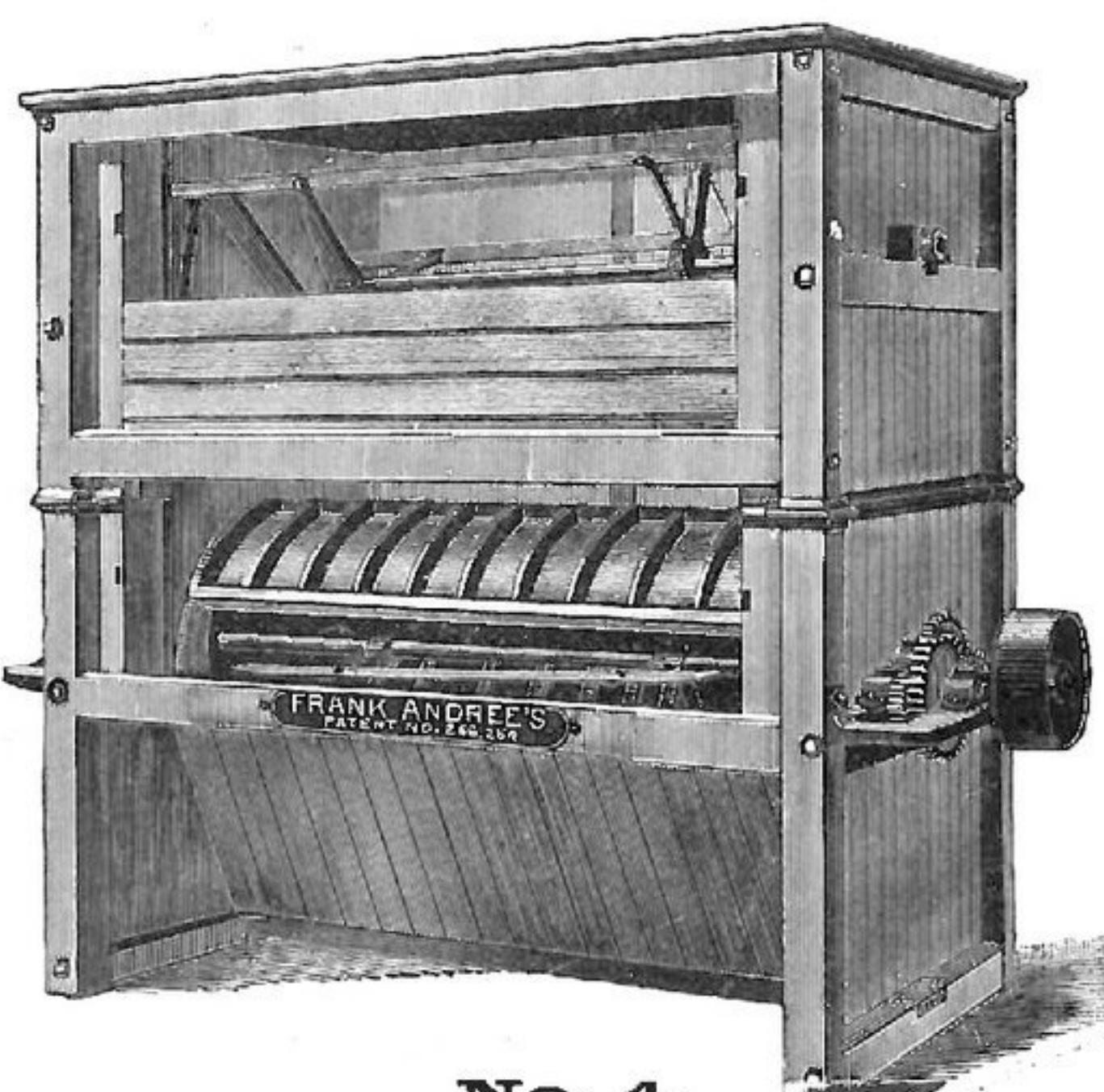
Our No. 3 Rotary Single Reel!

Our No. 4 Rotary Double Reel!

Our Interchangeable Bolting Frames!

The only complete system of Centrifugal Flour Bolting Reels in America.
The merits of simplicity, of quality, of quantity, of durability, of light running, and the entire practicability of our Reels has been demonstrated publicly and privately beyond dispute

REFERENCE GIVEN! SATISFACTION GUARANTEED!



No. 4.

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METHOD OF REDUCING LOBATED GRAIN.

Letters Patent No. 299,375, dated May 27, 1884, to Louis Gathmann, of Chicago, Illinois. This invention relates to a novel process or method in the manufacture of flour, farina, coarse middlings, or flour from wheat or other lobated grain. The first operation is decortication of the grain by any suitable or well-known means for the purpose, either chemical or mechanical, it being understood that in this operation of decortication a surrounding integument is left about the starchy body after the operation of decortication, as practiced by known means has been completed. Next the grain is split through the crease, also by any well known devices for the purpose. After the splitting has been performed and the kernels divided into parts or halves, the germ and crease impurities are of course exposed. In this condition the grain is subjected to another operation of decortication by any one of the means well-known for the purpose that it may be thought best to employ. In this operation the thin film or layer which incloses the starchy body will not be removed, but the outer bran substance, which in the previous operation of decortication was concealed and protected within the crease, will be removed, leaving the thin layer or inner portion of the original integument now embracing all parts of the half-kernels that were previously covered by the bran. Next the half-kernels are separated from the bran substance removed by the operations of decortication and from the germ and crease impurities and the minor fragments which have been detached in said operations of decortication, leaving clean large fragments or half-kernels inclosed, principally, by the thin interior layer of filament of the original integument. These fragments are in this condition subjected to a grinding operation by any suitable means known in the art, but preferably by millstones. The product will be composed of two parts, one comprising about nine-tenths of the entire decorticated grain substance, forming an exceptionally-pure flour and middlings, varying in relative proportions according as the stones are set to grind high or low with reference to the particular character of the product in this respect desired. The remaining portion of the product will consist of the bran filament together with parts of the starchy substance adhering thereto, and this second part is subjected to purification by the ordinary purifying devices employed in mills for this purpose. The first portion of the product above mentioned, comprising nine-tenths of the entire food substance of the berry, will usually be of such purity as to require no purification whatever, but may be reduced to any desired extent, or separated into coarse and fine products—as farina and flour—for any further separate treatment or use desired. As a modification, the grain may be split before any decorticating operation is performed thereon, and in this case the decortication will be wholly effected upon the broken or half-kernels. In the last case mentioned it is of course particularly desirable that the grain shall be well cleaned, either in its whole or broken condition, before decortication. The invention is not restricted to any particular mode of operating upon the portion of the berry detached, either in breaking the kernels or in decorticating the half-kernels; but as a little valuable flour substance will be removed in these operations, it will be better to perform any further reductions thereof, and

also to perform the operation of reducing the fragments of bran for the separation of food substance therefrom, upon rolls. The inventor claims that in previous methods of grain-reduction it has been impossible to produce a large percentage of coarse middlings or farina without bran adhering thereto. In the process described it is practicable to obtain a percentage of such coarse middlings or farina hitherto entirely unknown in the history of the reduction of grain.

FLOUR-REFINER.

Letters Patent No. 299,245, dated May 27, 1884, to Isaac Morgan, of St. Louis,

one being closed at the top by a cover, *i*, and the lower one, *j*, being connected by its lower end with the top of a spout *k*, through which the air enters by the suction of the fan *l*, and the refined flour escapes from the machine. Along this shaft, within the funnels *e*, is a series of cup-shaped centrifugal distributors, *n*, a feeder, *p*, and a couple of agitators or enliveners, *o*, attached to and revolving with the shaft, the feeder being larger than the lower end of the funnel under which it works, to serve together with it as a regulator of the feed of the flour, which is previously stirred and enlivened by the smaller cups above. The flour is fed in through the top *i* of the upper funnel *e* by

support to funnel *j* and spout *k*, as represented in the drawings.

DE PEW ON CHICAGO SPECULATORS.

The language used by Chauncey M. De Pew, in his oration upon the opening of the New York Produce Exchange, and to which the Chicago operators and newspapers have taken exceptions, was as follows:

"Two years ago the speculators of Chicago, acting upon a theory which might have been well enough, if food products could have been purchased by Europe only from America, by gigantic corners and other artificial processes, drove the price of wheat up to fabulous figures. The effect was magical, and roused to efforts to share in this wonderful wealth of annual harvests people who had slumbered for centuries. The Russian railway penetrated the rich mold along the Black Sea, and elevators were built at Odessa. English capitalists furnished seeds and implements to the patient Hindoo, and the British Government ran railroads through the valleys of India. The Creek Islands awoke to a new life, and the banks of the Nile, once more responded to intelligent culture. And now we are exporting gold instead of wheat, and accumulating debts instead of dollars. In the wheat pit of Chicago in a single year was buried more of the future prosperity of the Republic than the sum of all the traffic which flows through that great city would mount up to in a decade."

At another point in the oration Mr. De Pew said:

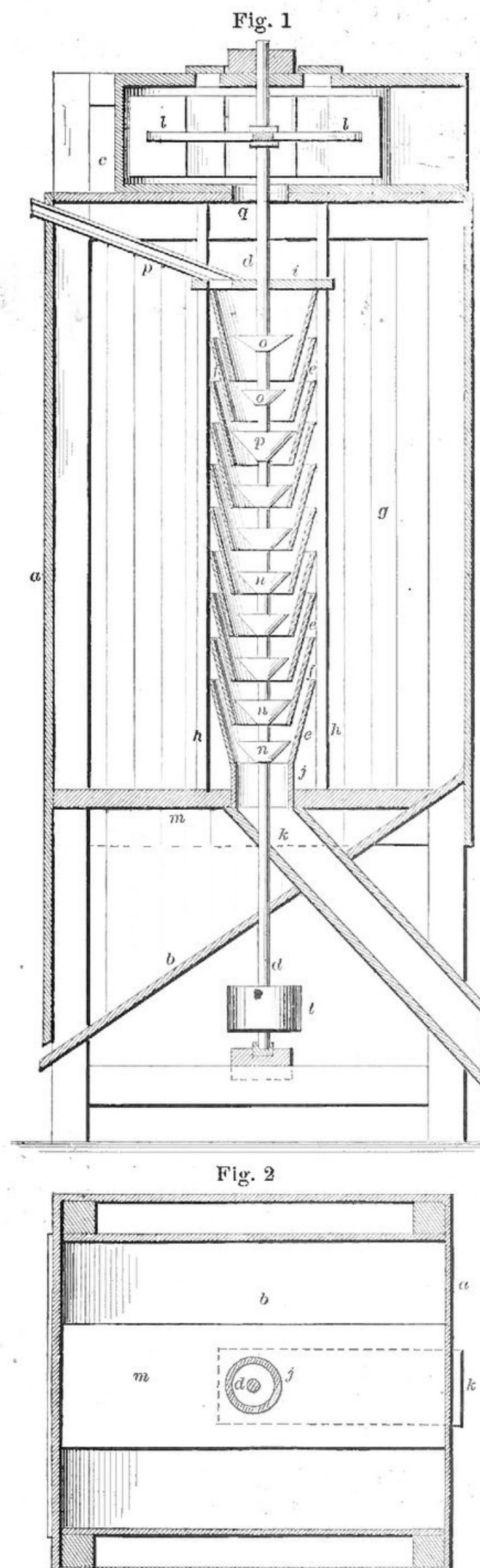
"Let some of the millions now squandered by the Government in the vain effort to turn turtle ponds into inland seas, and trout streams into navigable rivers, to perpetuate some local statesman, be wisely spent in organizing a bureau of information so vast and yet so accurate that misrepresentations, as to the daily prospects of the crops at home and abroad, as to the supply on hand in domestic and foreign markets, as to prices in the world's marts and the conditions of transportation, will be impossible, and make all these factors at all times accessible to every citizen. Then audacity can not play on credulity, and fiction upon ignorance, and a ring of speculators regulate at will the ebb and flow of our national life. Let the morning and evening trains, as they rush across the farms and along the highways, carry the signals of the weather bureau, so that the advantages of the prophecy may be utilized by every husbandman."

THE Russian Government is pushing a railway through the sparsely inhabited region of Central Asia. On some portions of the line the expected traffic will be so light that arrangements have been made to use camels as motive power. A contemporary suggests that on this novel train the engineer should play the bag pipes, screaming the Argyle quickstep, to indicate to the natives that the camels are coming.

A DAKOTA farmer, in 1881, we are told, planted a single grain of wheat in one of his oat fields. From it grew twenty-two stalks, each bearing a full head. These yielded 860 grains, 760 of which were planted the next year, producing one-fifth of a bushel of splendid wheat. This was planted last spring, yielding seventeen bushels, making 1,020 pounds of wheat from one grain in three years.

WILHELM & BONNER,
Solicitors of Patents,
Attorneys and Counselors in Patent Causes.

No. 284 Main St., Buffalo, N. Y.



FLOUR REFINER.

Missouri, assignor of one-fourth to Carol H. Coggeshall, of same place. Figure 1 is a sectional elevation of improved flour-refiner, and Fig. 2 is a horizontal section on the line *x x* of Fig. 1. Within a suitable vertical case, *a*, having a hopper-bottom, *b*, at the lower end, and a fancase, *c*, at the upper end, is arranged a vertical shaft, *d*, along the center, within a series of funnels, *e*, arranged in a vertical column and entering one within another, but providing annular spaces *f* between them, affording issues for the light matters contained in the flour to escape with the air-currents into the space *g* with the case *a*, said funnels being supported on the rods *h* or by other suitable means, the upper

THE MOTIVE POWERS

COMPRESSED AIR AS MOTIVE POWER.

THERE is a bill before the English parliament the object of which is to give to a joint-stock company powers to erect very large engines on land within the borough of Birmingham, and adjacent to the Birmingham and Warwick canal, and to lay mains in a certain area. The steam engines are to be of great power, and their duty will be to keep the mains charged, by means of suitable pumps, with air at a pressure of forty-five pounds per square inch. This compressed air is to be supplied to customers just as gas is, and its function will be to drive small engines for manufacturing and other purposes. Those who already possess small steam engines and boilers will be able to discard the boilers and all nuisance and expense attendant thereon; while those who have hitherto wished for mechanical power, but been unable to have it, will only need to supply themselves with small engines of a cheap and simple form in order to be able to avail themselves of the power offered in common with gas-engines. Air driven engines will possess the great advantage of being instantly started and stopped, and of costing nothing for power except when running. But the air-driven engines will have several advantages of their own. They will be of much less first cost, they will not cause heat or smell, neither will they need any flue to carry off products of combustion. In fact, their tendency will be to ventilate and purify any place where they are used. It is impossible to say beforehand what measure of success will be the ultimate lot of the new scheme; but the promise is good, and important results are likely to ensue. The users of the compressed air will pay by meter, and a man who only uses his engine half-time will find his air-bill in proportion. Extensive use will be made of the compressed air for driving sewing-machines for industrial purposes, and even for private use.

* * The steam power used in the manufactures of the United States, by the census of 1880, was equal to 2,183,488 horse power; the water power was equal to 1,225,379 horse power making in all the horse power of the United States 3,408,867. Counting one horse power to be equal to that of six men, we have in the power used in the driving of our factories in this country the equivalent of the power of 20,453,202 men. The steam power used in driving our factories, not including the water power, is equivalent to the labor of 13,100,928 men; and of our 50,000,000 people only 35 per cent are supposed to be capable of labor—in round numbers 17,500,000 laborers, persons capable of pursuing gainful avocations, in the country; and yet it would nearly take all these 17,500,000 men to furnish the force that is exercised by steam in driving the engines of our factories, the wheels, the spindles and the machinery of this country, and we do not begin to touch, even then, upon the saving of power by the use of the machines which are manufactured in these factories.

* * The railway mail bureau has completed a schedule for mail service between points in the United States and the City of Mexico. The service will be daily, and the running time between New York and the City of Mexico will be six days and twenty-three hours, while the return trip will be made in seven days and one hour. The distance is 3,749 miles, 1,224 miles of the railroad being in Mexico. Starting from New York at 8 A. M. the mail will arrive in the City of Mexico at 7:10 A. M. Coming northward the mail will leave Mexico at 9

P. M., reaching New York at 10:20 P. M. The following named cities are on the line of communication: Pittsburg, Columbus, O.; Indianapolis, St. Louis, Sedalia, Mo.; Kansas City, La Junta, Col.; Albuquerque, N. M., and El Paso, Tex.

* * A model of a novel canal boat has been placed on exhibition by a Cleveland inventor. The boat is to be propelled by a screw, so geared that it can be made to turn by horses or mules traveling in a circle in their stable in the boat. The inventor claims that abundant power can be had in this manner, and that a large saving can be effected, particularly in river towing bills and by the reduction of help; that it would be cheaper than the present method of towing, even though no better time were made, but he is confident that four or five miles an hour can be accomplished. We hope that the boat may prove a success, as speedier transportation has long been one of the most desirable things for the shipping over the Erie canal.

* * The French Societe d'Encouragement offer for 1884 the following prizes: For a new method of producing cast iron or steel, having properties of special value, a special prize of 3,000 francs; provided the method is by the incorporation of another metal and that the compound be already employed in manufactures and produced in large quantities. For the best machine for finishing the various parts of small arms and for cutting the teeth of spin-wheels, 2,000 francs. For two small motors, for fancy work-shops, a prize of 1,000 francs each; one must be a gas engine, the other must be able to be run by water-power. For a useful application of any metal known to science but not yet practically used 1,000 frs.

* * Another huge diamond has been discovered. On the 27th of March last a digger at the Kimberley mines, South Africa, was fortunate enough to find a diamond measuring 1 1/4 inches in length and 1 1/4 inches in diameter, weighing no less than 302 carats. This is by far the largest gem yet discovered in South Africa, or, in fact, elsewhere, if we except the Pitt and Mattam (of a flask shape) in their uncut state, and some diamonds of apocryphal history. It is a perfect octahedron in shape, and of the usual Cape or off color. Some years ago its value would have been simply enormous. At the present, however, it is reported that \$15,000 has been refused for it in its uncut state.

* * To what purpose may not glass be put? Bearings made of glass are now being experimented with in the rolling stock of railroads in regard to their frictionless quality. This material is a hard, clear substance, and must wear down smooth and give a fine bearing surface for an axle to rest upon. It is a non-conductor of electricity if not of heat, and the fine particles have as good a chance to work down the bearing of the axle to a running fit as in the grinding in of a valve seat for a brass valve, and much power is expected to be saved by converting the wearing of a journal into some other agency than by converting it into heat.

* * A French merchant in Western Africa has been presented, says the Republique Francaise, by M. Da Costa Soares, with Livingstone's map of South Africa. It measures about four feet by three feet, was drawn up by hand under Livingstone's directions, on a sheet of paper, gummed on canvas, and is annotated by him and his companions, the blank spaces being filled with interesting geographical and ethnological memoranda. The heights of mountains, names of tribes and meteorological observations are inserted, as also the navigable parts of rivers and plans of future explorations.

* * A French writer on the subject of belts, as compared with toothed gearing says. "In regard to the relative friction with belts or cords, and with toothed gearing, it is that theoretically the advantage is always more or less on the side of belts or cords; while a practical confirmation of this conclusion is furnished by the instances of a spinning mill, in which toothed gearing driving 18,000 spindles was replaced by belts, with a saving of 20 per cent. in friction, or 3 1/2 per cent. on the effective driving power transmitted; and in no case do belts cause more friction than tooth gearing."

* * The following simple method for the consumption of smoke is given by a German exchange: Start the fire as usual and let it burn until the coals are in a bright glow; then rake the coals on the grate to the right and left, so as to form an empty space along the middle, and put the fresh coals into this space. The smoke which is formed from the fresh coals is consumed by the glowing fires on either side. If the grate is very wide, two such open spaces in the fire are advantageous for the addition of fresh coal.

* * Mr. Richard A. Proctor, the well-known English astronomer, holds that if the full power of the arms and legs can be so applied to ingeniously arranged mechanism as to work wings more or less resembling those of a bird, there is little reason for doubting man's power of sustaining himself in the air, and even traveling with great rapidity through it. Probably, he adds, it will be much easier for him to sustain himself while traveling rapidly onward than while hovering over the same spot.

* * An antiquated report of the preliminary surveys of the Cleveland, Columbus and Cincinnati railroad, now before us, and bearing date of 1846, estimates the cost of the necessary iron rails at \$80 per ton, gross, delivered in Cleveland, says the *Iron Trade Review*. The fact that steel rails can now be bought for less than half that figure indicates the great industrial revolution that has taken place within the last 38 years.

* * Experiments have lately been made in Germany of using hair instead of leather or rubber for the pulley belts and bands in small machines, and they have met with unexpected success. Bands made of hair cling closer, and can be made much smaller for the same amount of strength than with any other material, but we are not told how the prices compare.

* * Last year not a single passenger riding in a passenger train on the Massachusetts railroads was killed except from his own fault, and there were over 61,000,000 passengers carried an average distance of 15 miles each. This is probably the most remarkable record yet made in the way of safety in traveling by rail.

* * For the forthcoming international exhibition of motors for small power, to be held in Vienna this summer, about forty different motors have been reported so far to be driven by water, steam, hot air or gas. It is expected that at least fifty different forms will be exhibited.

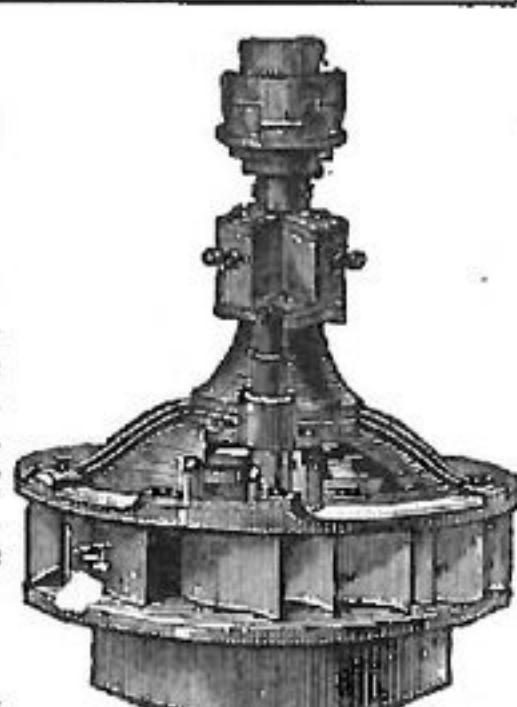
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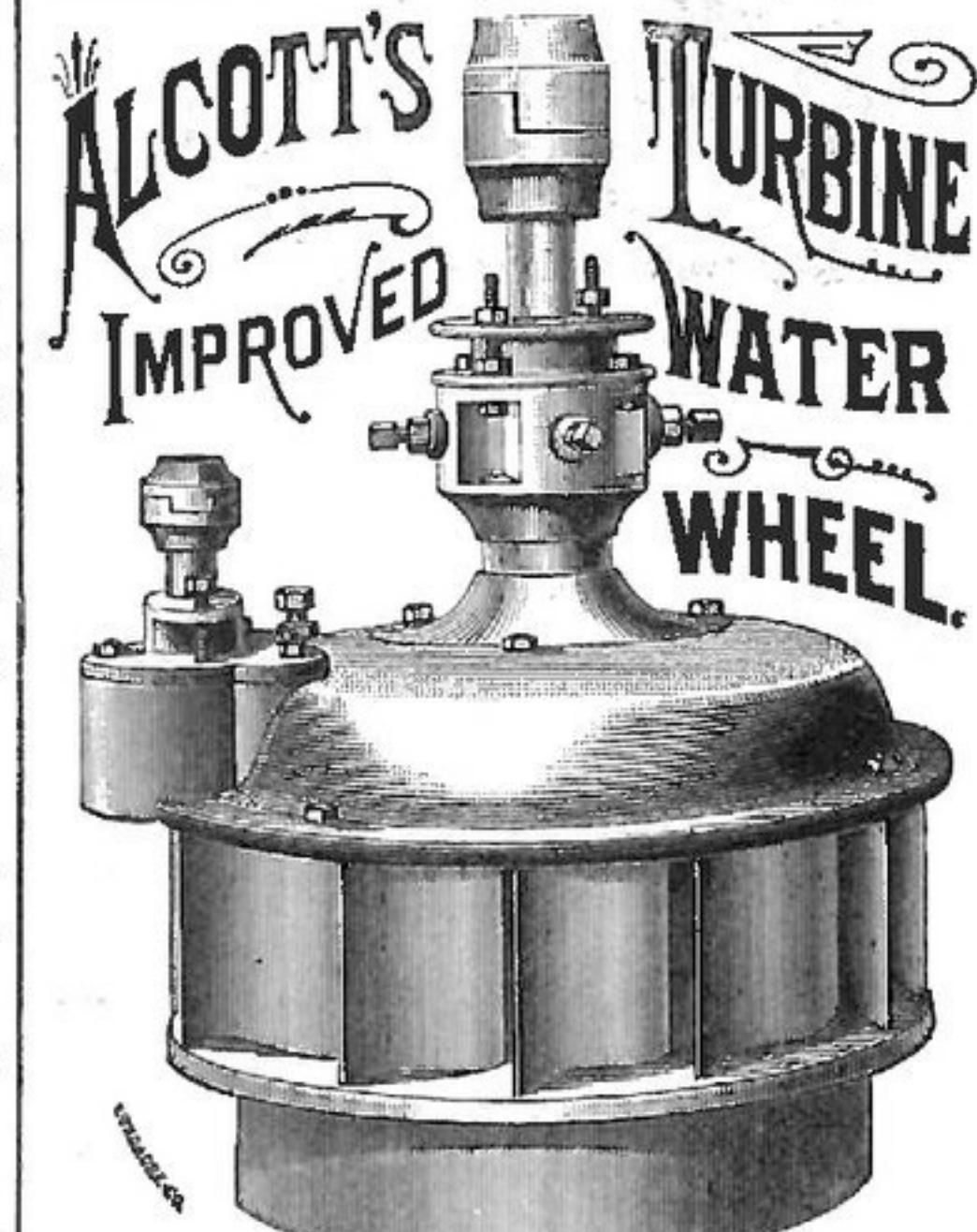
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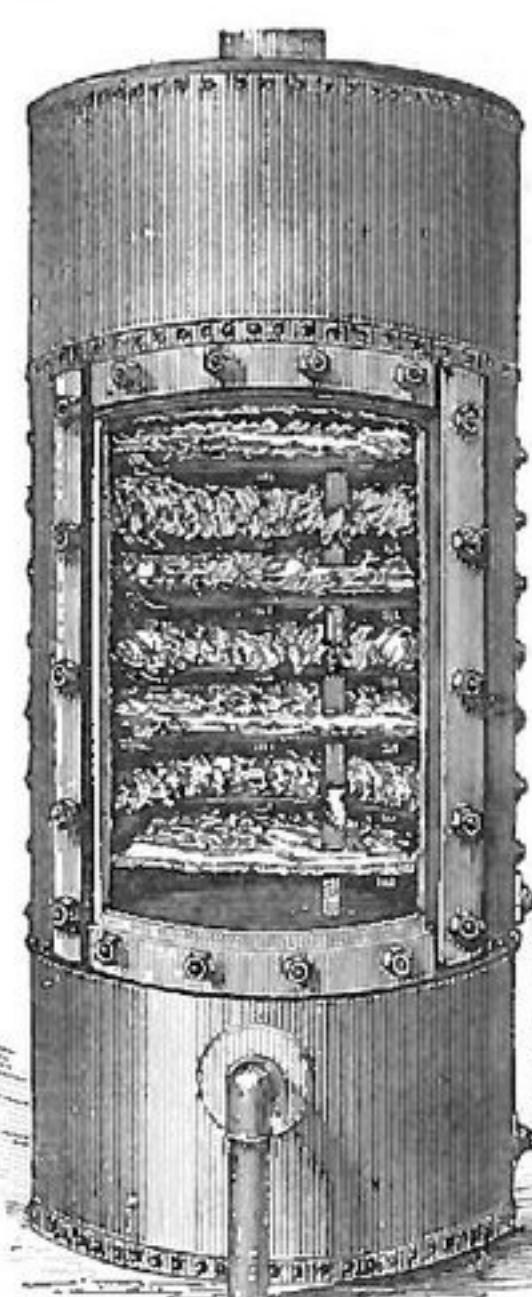
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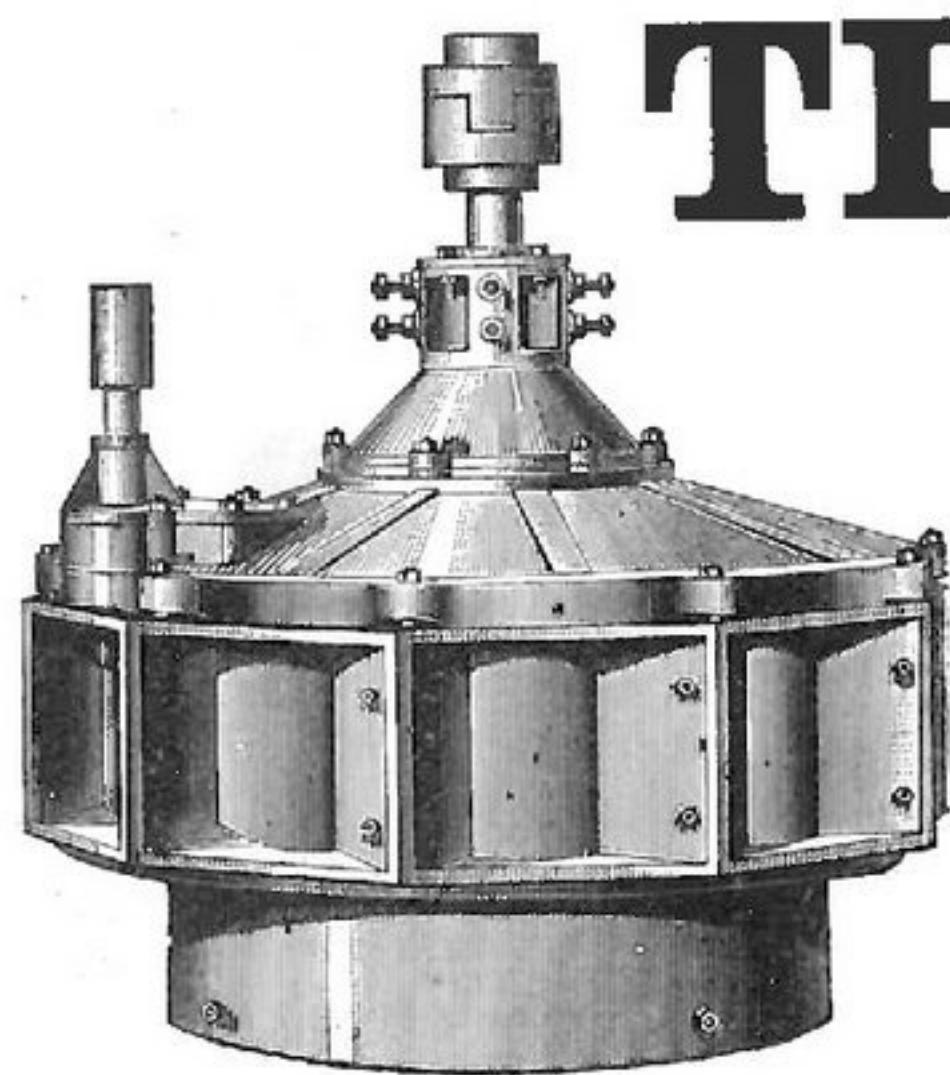
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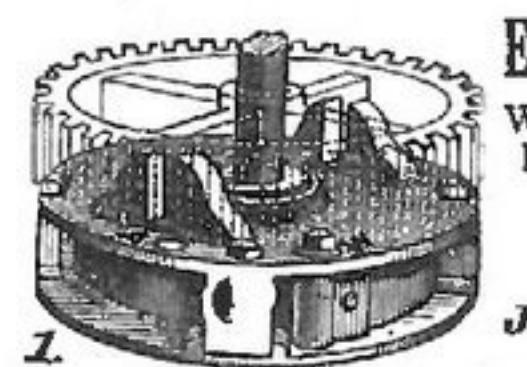


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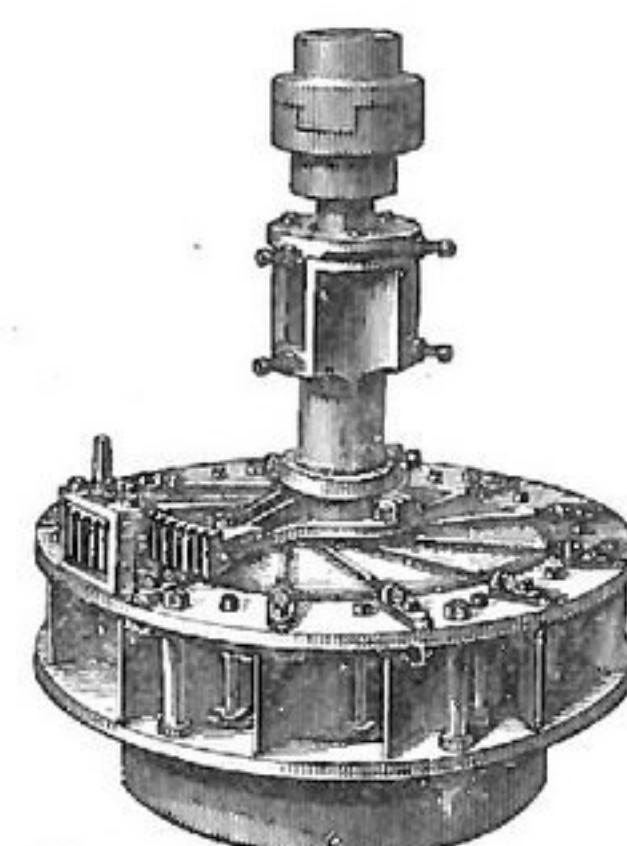
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24 Inch Wheel.....	.8436	.8416	.8202	.8002
24 Inch Wheel.....	.8206	.7910	.7700	.7003
24 Inch Wheel.....	.8078	.7578	.7275	.6796
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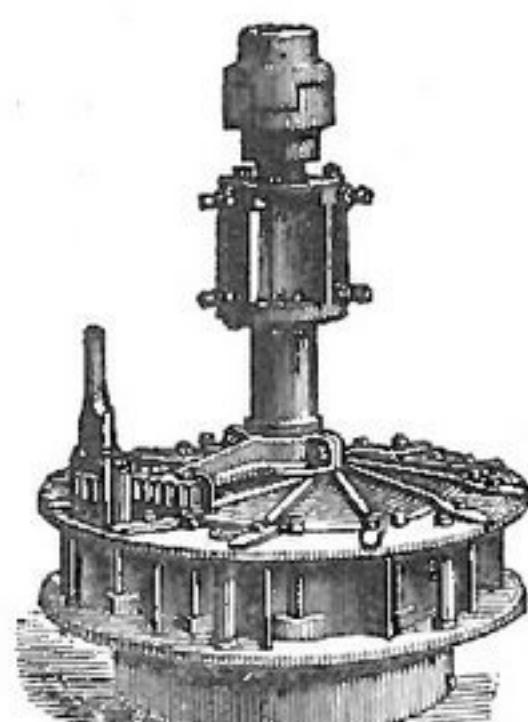
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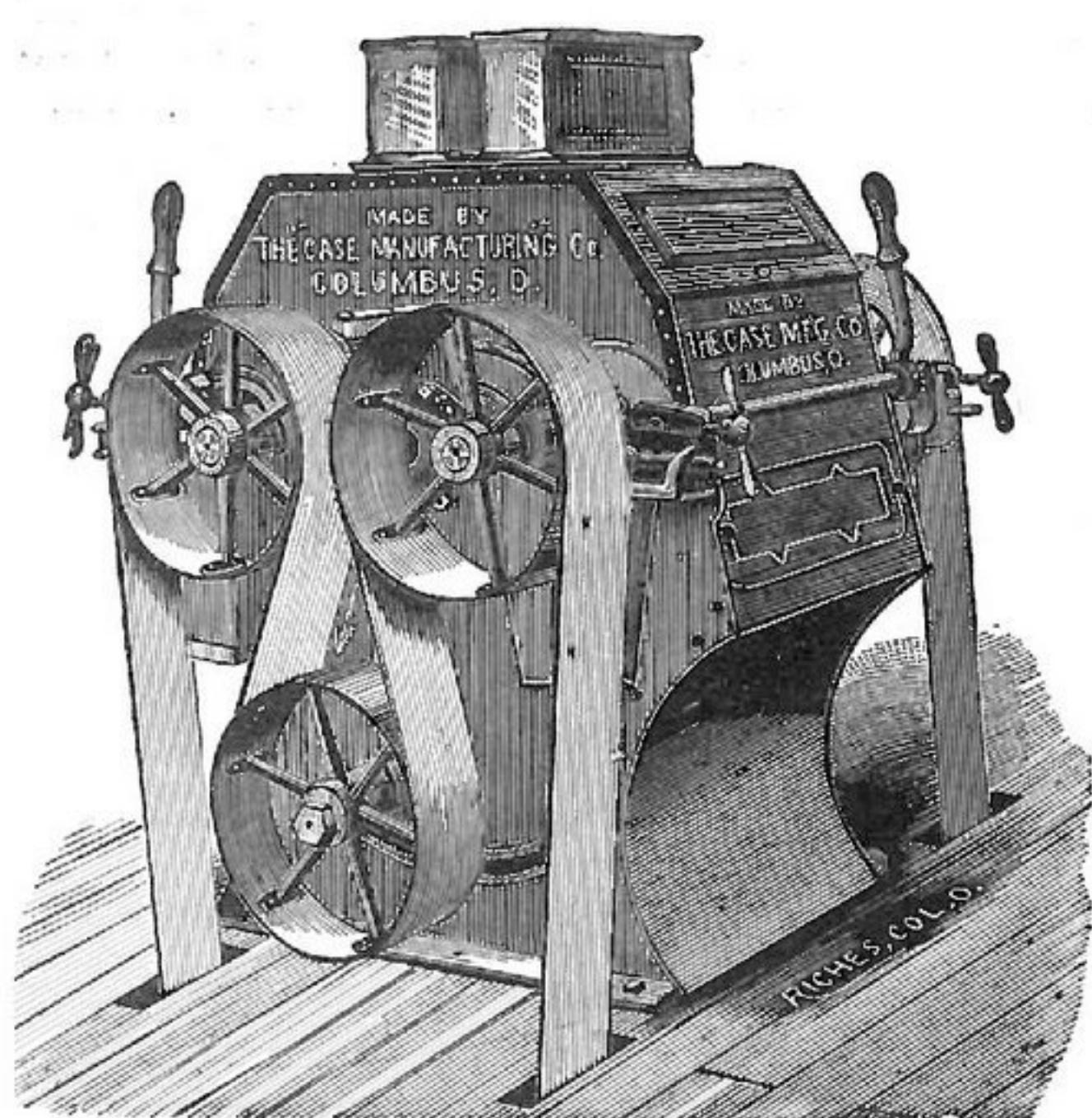
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WHY NOT TRAIN WORKMEN.

THE Philadelphia Board of Education is seriously considering whether the time has not come when the boys, at least, in the public schools should be taught the use of their hands and eyes—in other words, whether the mass of our population should not have a technical training. American mechanics and citizens are now at a serious disadvantage when competing with foreigners in all the mechanic arts. Many of the latter are trained from youth in artistic work, and of course become the superintendents and chiefs of the manufactorys of this country. The technical schools of Europe are very numerous: A great industrial college has just been completed at Berlin, costing two million dollars; yet Germany is a very poor country compared with the United States. We have a few scattered institutions, but they are intended to graduate engineers, not trained and artistic workingmen. Our system of education, on which we pride ourselves, does not fit the boy or girl to earn their livelihood. Nay, it is even complained that our high schools and colleges make the children of the very poor disinclined to work with their hands for their living. It is quite time that our American educational system was modified so as to train the youth of the country for industrial employments.

* * Cheese is among our most nutritious foods. It contains many elements for sustaining life, and people who can eat it find it nourishing and healthful; but everybody cannot eat cheese. Men who live in the open air and work hard can digest it; but the great bulk of people, who live and work indoors, can only partake of it as a relish at the end of a dinner, or as an accompaniment to their dessert of pie; yet 20lbs. of cheese contains as much nutritious material as a sheep of sixty pounds in weight, and it has the same value as practical nutriment if it could be easily digested. A distinguished English chemist suggests a remedy for the indigestibility of cheese. It is to add the bi-carbonate of potass to cheese. He prepares the dish as follows: Cut the cheese into shreds, grate or chop it up fine, like suet. To every pound of cheese add a quarter of an ounce of bi-carbonate of potass. Put the resulting mixture into a saucepan with three times its bulk of water, or four times its bulk of cold milk, and mix well. Put the saucepan on the fire and let the mixture simmer, stirring all the time until the cheese is melted, which does not take long. Turn out into a dish, and the result is a nutritious mixture, which thickens like a custard in cooling. This cheese custard may be eaten with impunity by persons whom a small piece of ordinary cheese would sicken. Cheese treated in this way is recommended for sea voyages to be used instead of salt junk. It prevents scurvy, and is a great saving in bulk compared with other food. It is the absence of the potass from the ordinary cheese as well as salt junk which makes them unwholesome.

* * M. Trouvelet has communicated the results of his recent investigations on the planet Mars to the French Academy of Sciences. Since 1875 he has been engaged in observing and mapping the configuration of this planet, which is believed to be in a more advanced stage of development than the earth. The latest of these observations are the most interesting, because the planet now presents his boreal or north polar regions to the earth, which have been less

studied than the austral regions, owing to difficulties of observation due to the distance of the planet from the earth when the boreal pole is inclined toward us. M. Trouvelet thinks he has recognized and figured all the spots visible on the north hemisphere, even to the polar patches of white; but he still hopes to add some of those in these polar regions. The northern hemisphere of Mars is, according to M. Trouvelet, much less rich in dark spots than his southern, and, apart from the seas of Knobel, Tycho, and Airy on Mr. Green's chart, the dark spots which now surround the polar patch are of little importance. The great continents of this hemisphere are nevertheless dotted with grayish spots more or less faint. Having regard to the changes which he has observed in these spots from year to year, M. Trouvelet supposes them to be due to a vegetation which alters with the changes of the season. M. Trouvelet has also observed important changes in the dark spots of the southern hemisphere, particularly in one of a crescent shape seen to the north of the sea of Terby (longitude 85 degrees, latitude 8 degrees south). This spot, which was very faint in 1877, is now very distinct and almost as black as the sea of Terby.

* * There is an annual battle between American martins and English sparrows at Midvale, N. J., for the possession of a box upon a fixed pole, wherein the martins have nested for many years. This box is coveted by the sparrows, and every spring before the martins return from their autumnal migrations, they build their nests and set up house-keeping in it. This year they went through the performance, and when the martins came they found their home in the possession of strangers. After flying about the box for some time the whole flock of martins betook themselves to a neighboring tree and there kept up a chattering, which had all the appearance of an indignation meeting. Then they made an attack on the box, and for some time there was a lively scrimmage among the feathers. The American birds succeeded in ousting the pugilistic foreigners after a hard fight, and then began a house-cleaning. The nests of the sparrows were ruthlessly dragged to the opening of the box, from which they were thrown to the ground. Every bit of straw or other material composing sparrows' nests was thrown out, and the disconsolate sparrows had to seek a new home.

* * Under a new rating of New York hotels by the Tariff Association of local fire underwriters, the following rates per \$100 have been fixed for the hotels named:

Building.	Furniture.
New York.....	\$1 10
Grand Union.....	1 05
Fifth Avenue.....	85
Windsor.....	65
Sturtevant.....	90
Murray Hill	1 00
Union Square.....	90
Hotel Dam	90
Rossmore.....	90
Continental.....	1 90
Buckingham.....	60
Grand Central	1 90
Hoffman	1 25
Victoria	2 10
Brunswick.....	1 35
Gilsey	1 60
Metropolitan.....	2 00
	2 50

As the above ratings are based upon what is supposed to be the fire dangers of the hotels, says an exchange, persons visiting New York and having fears of the fire fiend, when put in one of the sky parlors, can form some idea of their chances of cremation, comparatively, as between the hotels given in the table quoted.

* * With all our activity in production, and our seeking for foreign markets, says the *Western Manufacturer*, we buy much from, and sell little to, countries lying south and nearest of all the world to us; and the

little sold represents our least skilled industries. For instance, we sell provisions, lumber, petroleum, &c., and buy principally coffee, hides and skins. At the same time, these Southern nations, unskilled in manufactures, purchase all kinds of fine and coarse goods and household articles almost entirely from Europe. We endeavor to push our products of skilled labor upon the countries which produce already the surplus that supplies our southern continent, Mexico, and the West Indies, from a double distance, at what ought to be a greater cost of freight. We also, with the balance of trade greatly against us in those southern countries, furnish through that paid-up annual balance the money that pays for those purchases of European goods.

* * M. Regnard has been making some experiments on the influence of high pressure on living organisms. They are particularly striking (*Science Gossip* observes) as bearing on the pressure which the sea water must exercise at great depths of the ocean. It was found that soluble ferments were unaffected by extreme pressure. Starch, at 1,000 atmospheres, was converted into sugar; algae at 600 atmospheres were decomposed, and the carbonic acid liberated; infusoria, leeches, and mollusca were rendered insensible at a pressure of 600 atmospheres, but recovered when the pressure was removed; fishes possessed of swimming bladders resisted 100 atmospheres, but became insensible at 200, and died at 300 atmospheres.

* * The necessity of changing the diet for warm weather is not yet fully realized, though it is quite as important as that of changing the clothes. People see the customary warm meats and soups at dinner, and without thought, employ the usual bill of fare. Wholesome fruit has been proved excellent in many cases for supplying the proper nourishment, and if fruit and vegetables do not relieve the exhaustion produced by heat, a draught of pure milk, if it can be obtained, acts as a veritable tonic. When we are in the tropics, we must live accordingly.

* * The hero of the hour at Berlin at present is Dr. Koch, the president of the German Cholera Commission, who has just returned from India, where he discovered the cholera germ. He studied medicine at Goettingen, and afterward pursued his microscopic studies of bacteria at Breslau, under Prof. Cohn. Dr. Koch has been known to the scientific world for some

time, as a conscientious and accurate observer, but to the non-scientific world his name was unknown until his discovery of the germ of consumption a few years ago.

* * A number of hybrids between wheat and rye have been grown by the *Rural New Yorker*. The heads of one of these plants are very different from either of the original grains. Should this cross produce a new grain as hardy and prolific as rye, giving flour of a better quality, it would prove a great acquisition. Although it is well worthy of record that this has been effected, the grain when full grown may prove inferior, in all essential particulars to either parent.

* * A return lately published in the *Journal Officiel*, shows that the unfavorable condition of France as regards the increase of population, is more marked than ever. As far as such increase is dependent upon the augmentation of births over deaths, the population can now double itself but once in 267 years. In reality, the doubling takes place more rapidly, owing to an increasing number of immigrants. It is once in 165 years.

* * The planting of cocoanut orchards is beginning to be a regular industry in the Fiji, and some other of the South Sea Islands. The trees are planted about twenty feet apart, and after three years can be left to themselves. In the eighth year they begin to bear fruit, and the average yield of an acre at present is worth not less than \$1,000.

* * The fire insurance companies of Sweden have offered a reward of 2,000 crowns for the most practical device to arrest sparks and cinders from locomotive and steamboat smokestacks. A trial of different devices, that may be sent in, will take place in Stockholm, Sweden, during the month of August this year.

* * Professor F. A. P. Barnard, President of Columbia College, New York City, and commander William T. Sampson, of the United States navy, have been selected by the President to represent the United States in the International Meridian Conference, which is proposed to convene at Washington in October next.

* * According to the German monthly statistical statement, the total number of those who left the country for America in the first quarter of 1884, was 29,782, as compared with 28,294 in the same period of 1883.

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Parties desiring to sell, buy, or lease mill property should not fail to write us. Our List covers various sections of country, and we have mills at all prices, and can offer some decided Bargains in the West.

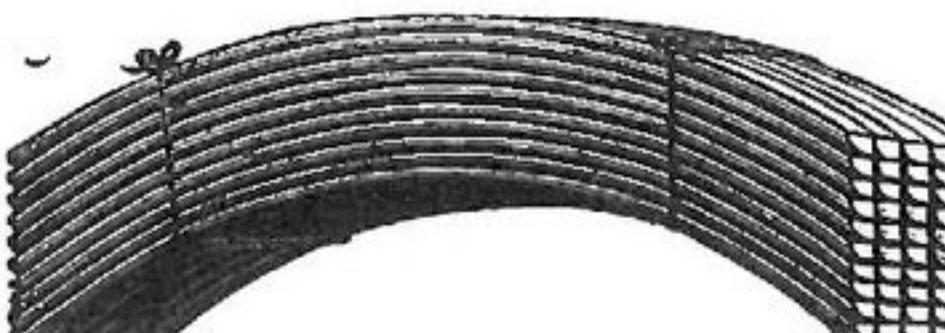
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J. W. McKEEN, a milling engineer and practical millwright of large experience in the best mills. Mr. McKeen planned and built the **Queen Bee Mills** of **Sioux Falls, Dakota**, acknowledged to be the **finest mill in America**, also the **Washburn C Mill** at **Minneapolis**, and other fine mills.

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SCORE OF EXPERIENCED AND EXPERT MILLERS, FOREMAN MILLWRIGHTS, and HYDRAULIC ENGINEERS.

We have now under contract and in progress of construction a large number of mills both large and small in different sections of the country. We point with pride to the many hundred successful mills now running on the Odell System. We are prepared to furnish information, advice and estimates on short notice and solicit correspondence from millers.

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CORRESPONDENCE

THE OBNOXIOUS PATENT BILLS.

Editor Milling World:

In February, 1879, I wrote the following criticism on the Senate Patent Bill, No. 300. As bills containing features similar in effect to some of the obnoxious features of this, have been under consideration in the present session of Congress, one of which passed the lower house by a vote of 114 against 6, and some 200 members vainly and shamefully attempting to shirk responsibility by an ominous silence, I would like to give the subject a further airing through the medium of your journal, and such other papers as may choose to copy it, with the addition of a few interpolations I make in reference to the present schemes for depriving the people of their rights in patents.

This bill if made a law, would be an act of vandalism, legalizing robbery and oppression, and rendering the Patent Laws of the United States a mere mockery, and worse than a nullity. It provides for a patent fee of \$35 on the issue of the patent, a tax of \$50 in four years thereafter, and \$100 in nine years thereafter; total \$185 for each patent. Failure to pay either of the last two fees nullifies the patent. It grants only partial, instead of the exclusive rights of property in patents, allowed in our present laws. It allows others to use the patent without consent of the patentee, subject only to nominal license fees or damages, and not even to them after a lapse of four years, and in case of suit for infringement, if judgment is less than twenty dollars, the inventor must pay both his own and the infringer's costs. If the patentee requests an infringer to cease infringing, and does not commence suit for damages within, what those perhaps inimical to his interests might declare, a reasonable time, the infringer may use the patent during its entire term, without liability to the patentee. There are also other very objectionable features discriminating in favor of infringers, and against patentees, which, with the foregoing, virtually destroy the prerogatives of sole ownership in patents; rendering the letters patent, not only worthless, but really detrimental to the interests of the poor man, and of but little, if any value in the hands of the wealthy man, as I will attempt to show. For convenience of reference, I here give a condensed statement of some of the worst features of the bill.

1. It imposes heavy taxes, and nullifies the patent on failure to pay each of them.

2. It subjects the infringer to only nominal, and in some cases no damages at all. So with some present schemes.

3. It hedges the patentee about with such restrictive conditions as to make it dangerous to attempt, and difficult to obtain even such meager damages. So with some present schemes.

4. It subjects him to the danger of being compelled at any time, at the instance of any person so interested, to defend his patent against being declared void.

5. It subjects him to the danger of encountering in any suit for infringement, or in any defense of his patent, the written testimony taken in the case of some other patent, though the witnesses may be dead, or gone to parts unknown.

Such a law can only work injury to inventors, and to the world at large. Very few men indeed, whether rich or poor, who fully understood its character, would be so foolhardy as to enter the lists as patentees, or as owners of patents by assignment.

These nefarious schemes, if successful, would eclipse the glowing sun of progression, while only in the morning of ascension; casting a blight upon the industrial interests

of our country, making us a hiss and a by-word among the nations. I do not believe their equal for harm can be found in any patent code now extant. Better annul our patent laws entirely, than substitute such as these.

To appreciate somewhat the effects of such a law, it is only necessary to contrast the effects of our present patent laws upon our people, individually and nationally, in our wonderfully rapid advancement in all the elements of material, educational, and moral prosperity and power, with those nations either without patent laws, or with them hedged about with such onerous restrictions, useless formalities and excessive charges as to debar a very large majority of those who under a wise, just, and beneficent code, would be the most likely to develop and perfect useful discoveries and inventions.

Who, and what are they, who are waging this unholy and iniquitous onslaught upon the rights and needs of the very class of persons who have done and sacrificed more than any other, in elevating mankind from a state of barbarism, idolatry, degrading superstition, immorality, poverty and crime; to its present comparatively high state of prosperity, comfort, happiness, enlightenment, morality, refinement and power; such as has no historical parallel? I answer:

First. The unintelligent, conservative and bigoted class, who are slavish imitators of ancient customs, and modes of procedure, because their "wise old ancestors" did so; and who love to prate of the "good old times," in disparagement of the present better times.

Second. That numerous class of persons interspersed through all grades of society, who have no intelligent appreciation of the fact that for the present conveniences, comforts, and refinements of life, we are indebted to those who devote the best part of their lives and fortunes in studying the chemical, electrical, and mechanical laws that govern the material universe, and in experimenting and devising means for employing those forces for the benefit of mankind.

Third. A class of selfish, penurious, and short-sighted manufacturers, who imagine that to throw out their old, imperfect, and half-worn appliances, and adopt the new, more perfect and profitable would be in effect the squandering of so much money for "new fangled notions," the very contemplation of which, in their circumscribed view, is antipodal to all rules of economy and financial prosperity. And, moreover, the idea that a moiety of the price of the article was to be considered as a royalty for the use of the patent, would to them, appear to be an unmitigated outrage.

Fourth. A numerous class who pride themselves on their shrewdness in business, and on getting the best of a bargain without compunction of conscience, no matter how much others may suffer by it. Such men when they appreciate an improvement that would apply advantageously in their business, will, if possible, pirate and use the invention, and resort to some mean subterfuge to evade the law, or if they believe the owner has not the means to enforce the law against them, they will use it in open defiance and disregard of his remonstrances and his rights; and, if finally, they are compelled at the end of an expensive law suit, to pay damages and costs, they set up the ominous cry of patent monopoly, corrupt ring, patent sharks, down with the patent laws, or so modify them as to make them but a snare and delusion, and worse than no law at all. And all the piratical crew join in chorus and shout their fiendish approval.

Fifth. Corporations that have use for inventions. They in the consciousness of superior power to resist the legal assaults of single individuals, or of those possessed

of only moderate means, are wont to appropriate such inventions as will be beneficial to them; only paying, as some of them say, "by plucky inventors." That is to say, they pay only those who have the money to enforce payment by legal process. All others they rob. It is said that corporations are soulless. If that be true, (and there seems to be much evidence to that effect), it shows that the individual members thereof are so; and if they do not manifest it in their individual intercourse and dealings with men, it is not for lack of the disposition, but because they would have to bear the onus of it, instead of shirking it on to a corporation.

Property in patents should be considered as sacred, and be as thoroughly protected by law and by courtesy as any other species of property. And any man or corporate body, and the individual members thereof, who knowingly, and without consent of the owner or owners of any patent, appropriate the same to their own use with intent to defraud, refuse and resist just and equitable payment therefor, are acting in the spirit of the sneak thief, the highway robber, the organized banditti and the pirate; and should be considered as no better than they, with the exception that the element of murder does not necessarily enter into their operations, and that in the main they are pursuing some useful calling. Yet notwithstanding this, they are practicing the principle that "might gives them right" to the free use of other men's property, which is the essential principle of brigandage.

This scheme should be frowned upon and condemned; and there is a reason to believe that should it become a law, its injurious effects upon the material interests of the

country would become so palpable as to re-act upon the instigators of it to such an extent and degree, as to cause many of them to clamor for its repeal. Suppose a provision in law like that of section 2 should be passed, allowing the voluntary and forcible tenancy of houses, lands and other tenements, by whomsoever chose to do so, and the damages predicated on some preceding rental, or the aggregate profit of all the business carried on by the trespassers in connection with that of the premises occupied; what would be the result? To a person owning such property, and possessed of respectable intelligence and a lively imagination, the contemplation of such a state of things would be fearful. But for the delectation of those who view the rights of eminent domain in the property of patents through the medium of a narrow contracted selfishness, I will proceed to give a slight portraiture of the possible and even probable results.

First. As to patents. It would discourage invention to such an extent as to reduce rather than increase (as in the past) the business of the patent office. And in view of the proposed taxes, none but those whose financial circumstances were such as to make it highly probable that they would be able to pay the taxes, independent of any income from their patents, would be safe in obtaining patents.

Second. In view of the merely nominal damages allowed for infringement, and the many obstacles interposed in the way of obtaining even that, and the danger of being summoned at any time to defend the validity of his patent, gives it but a precarious tenure. What but rank injustice is it, to allow a lot of harpies who lay in wait till a market for an invention is established, and then pounce upon and appropriate it to their own use? And only be subject to pay a license fee, predicated perhaps, upon a merely nominal license which had been accepted under pecuniary pressure after years of toil and large expenditure, even to the last dollar, in educating and overcoming the prejudices of the people;

and the adverse intentions against the inventions.

Third. It is provided that the infringer "shall not be charged with any saving he may have made, unless it has enabled him to realize an actual profit in that part of his business connected with the use of the invention." Now it may happen that although he may have really made a fair profit in the manufacture and sale of the invention, yet the losses on "that part of his business connected with it," may more than overbalance all the profits on the invention; in which case the owner of the patent, after prosecuting an expensive law suit, would get nothing, and the rascally infringer who has really been benefitted, and has injured him, goes scot free, and the inventor must pay both his own and the infringer's costs, because he has either got no award at all, or less than twenty dollars damages. Could anything be more unjust? What encouragement is this for discoveries and improvements in the sciences and arts.

Fourth. As to the property under such laws in relation thereto; houses, lands, manufactories, and other tenements; there would be no security against forcible or clandestine entry, occupation and use. The inducements to clear up lands, build houses and manufactories would be only nominal and precarious; and society would be thrown into anarchy and started on the road to barbarism. Then would spring up a feudal system, and strong and influential men would gather about them a class of servile retainers, and by force of arms attempt to possess themselves of the most desirable lands and tenements; and then would ensue a state of internecine war fearful to contemplate.

That our patent laws, like others, are in some respects imperfect, and that abuses of administration and otherwise, under the most perfect law might obtain, is to be conceded; but that furnishes no justification for a discrimination in law, abridging the rights of the most humble individual or class, and granting immunity and superior prerogatives to another; especially in direct contravention to the rights of the former. Such is the character of the proposed change in the patent laws, as embodied in the "Wadleigh bill," and come before the present congress. Once carry it out by an accomplished act of legislation, and we will have inaugurated a scheme of despotism, the sweeping and deleterious consequences of which the mass of those who are now loudly clamoring for it, do not even dream of. While those who revel in the vain glory of the power of wealth, and as they suppose, superior business shrewdness and foresight, imagining that thereby, they are to reap rich piratical harvests at the expense of the inventors, seem to be oblivious of the fact that the proposed law, like a two-edged sword, cuts both ways, and that just when they were flattering themselves with complacent unction that they had got a fine thing, competitors of the same ilk were springing up all around them to divide and depreciate the profits of their unholy spoil. Verily the ancient adage that "whom the Gods would destroy, they first make mad," would in this case be fulfilled.

O! American citizens: Pause in your mad career and consider the injustice and the far reaching, cruel and deleterious consequences of your contemplated act; and methinks you will recoil with horror from the perpetration of this truly agrarian measure, which would furnish a precedent and a pretext for all sorts of communistic schemes; for it is plain that it would be no more unjust to apply the principle to other property than to patents. Do not think you can with impunity set this ball in motion to crush out one class of human interests, and prevent it from gathering a force that will crush or mutilate other interests. Nor that

the retroaction upon yourselves, of your supposed antidote for your present seeming ills, will not open up a Pandora's box of ills much worse than those from which you hope to escape. Remember too, that when you raise the cry of "patent sharks, patent rings, etc., you are protesting against the very state of things you have fostered and forced into existence (as a general rule) by your unlawful appropriation of the inventions of poor men, despite their pleadings and protestations, and persistently refused to reward them, and treated them with contempt, until finally their inventions have become so generally adopted as to be a standard necessity; and then the poor inventor, or his heirs, in case of his decease, see a rich field spread out before them, guarded by an army of infringers of various grades of wealth, from low to high; so that alone they cannot hope to reap and gather a single sheaf, and are forced to sacrifice the greater part of their interests to secure the aid of wealthy men to enforce their rights. In such cases it is true that exorbitant prices are sometimes demanded, all of which, as a general rule, might have been avoided by fair dealing at first with the inventors.

The signs of the times are ominous and extreme agrarian schemers would seize with avidity upon an act of this kind, procured at the instigation of a professedly wealthy, respectable and influential class of citizens, as a justification of their wild and destructive schemes.

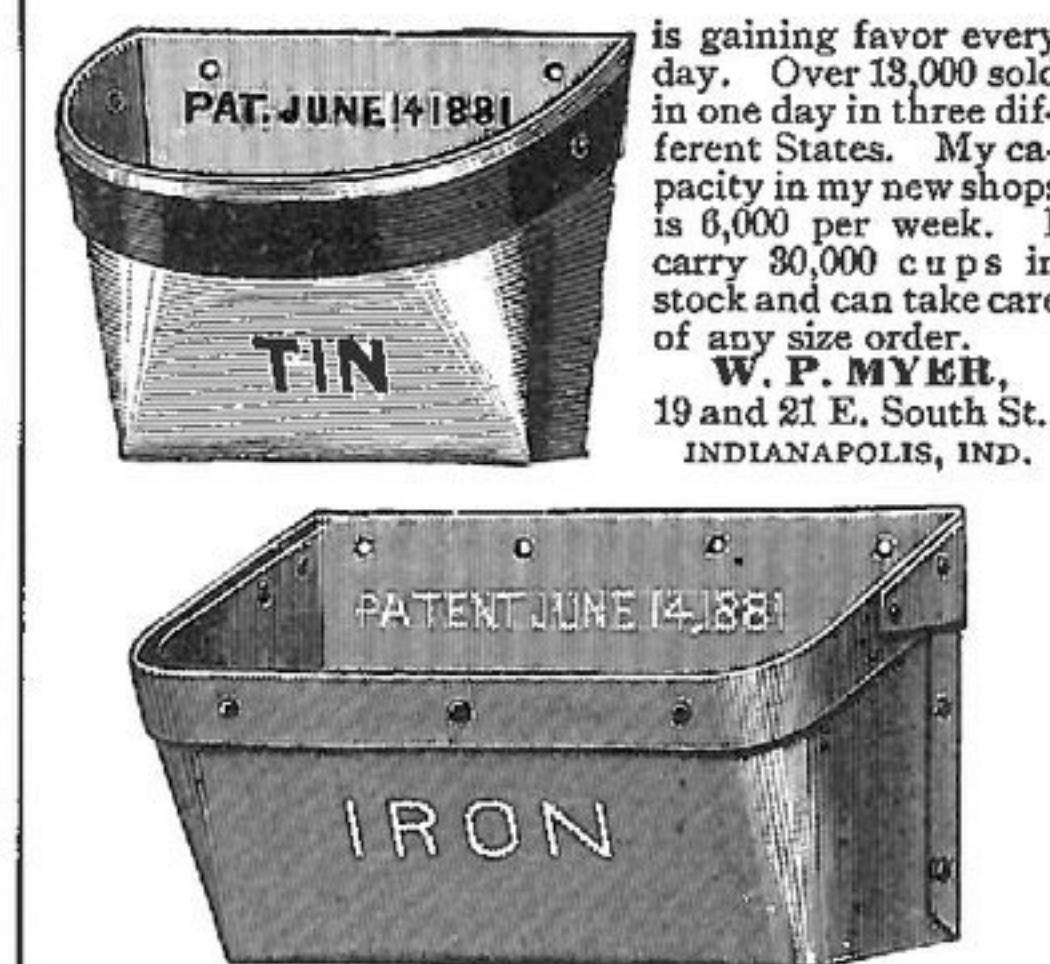
No more destructive in degree perhaps, but only in extent, than your raid upon the rights of inventors, if you accomplish your present purpose. Do not think that if you supply this example, the probabilities of an attempt, or the possibilities of an application of similar rules to other interests, are so remote or unlikely as to be beneath the serious consideration of intelligent people, and therefore not to be considered as related to and encouraged by the accomplishment of such a procedure as the one in question.

Many no doubt rested in conscious security in the faith that the wisdom and patriotism of Congress would put a quietus upon the unhallowed scheme; but such a hope is at least half blasted by the fact that the Senate have already passed the odious bill. In the present instance the lower house have led in the same direction. If this is a criterion by which to judge of the wisdom and integrity of both houses of Congress, what guarantee have we that under strong political and popular clamor they will not pass laws of a broader and more ruinous scope even than this? While it is to be conceded that some of the provisions of the bill as passed by the Senate, may work beneficially for all concerned, yet there are so many provisions that would work direct and great injury to inventors, as well as incidental injury to the public, that it ought not to become a law. And so in the present instance. For it must be conceded as axiomatic, that any law making unjust discriminations, favoring one class at the expense and damage of another, will in its retroaction injure the whole body politic. If it be said that granting an exclusive right to an inventor for a brief term of years is such a discrimination; I answer, it is not. First, Because an invention developed into a practical and useful condition, is the fruit of exhausting mental and physical labor, and in many cases also of great privation and suffering. Second, Because it is a beneficent gift to humanity, which in many cases transcends thousands of fold that of the whole life labors of any one man in ordinary pursuits. Yet the latter is sole and absolute owner of the products of his labor, in shop and on farm, and for the latter he acquires an absolute and everlasting title of ownership, by simply paying the requisite fee to the government, as an

equivalent for the necessary surveys and protection it provides for him, the same as it does for the inventor, for a merely brief period, for complying with similar terms.

GEO. WALKER. M. E.
Hamburg, N. Y.

THE BOSS ELEVATOR CUP



JOHN C. HIGGINS & SON,

Manufacturers and Dressers of

MILL PICKS.

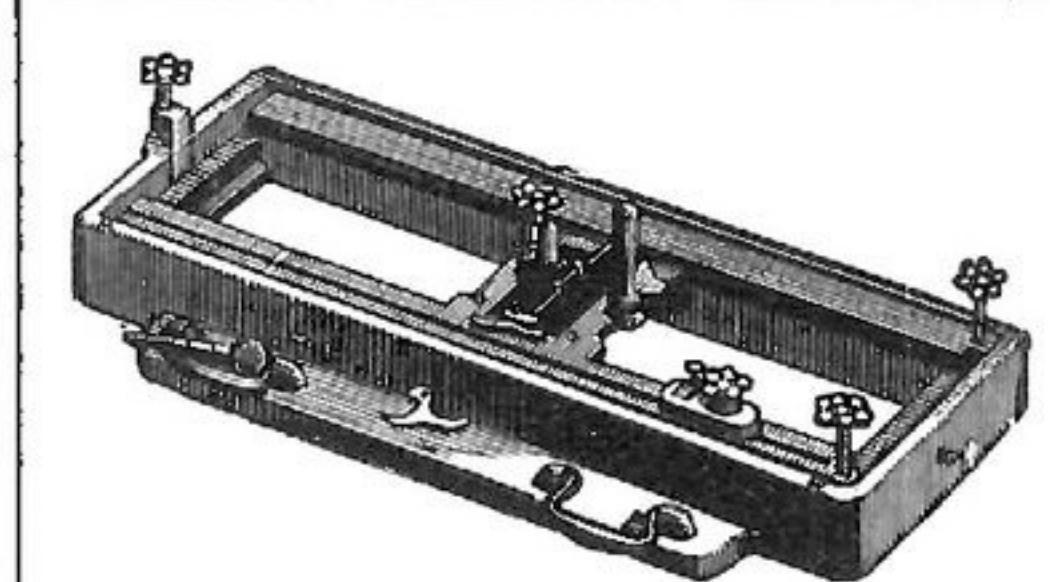
168 KINZIE ST., CHICAGO.

Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canadas, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canadas.

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Diamond Millstone Dressers.



No screw feed. A new invention. Automatic rod feed. The only perfect, practical feed ever invented for a millstone dresser. A revolution. No ratchet wheel, springs, pauls and levers to contend with. Can cut over 1,000 cuts per inch right or left, reversed with the tip of one finger, while in motion. Feed can instantly be regulated to cut fine or coarse with one hand while the carriage is operated with the other, by the use of this rod feed can push the cross head right or left for quick operation. Self reversing when pushed to either side of carriage. A machine of special merits, is specially adapted for deep facing, as the feed can instantly be regulated to protect the diamond point, therefore need not raise the diamond on account of a slight raise. No extra attachment required to furrow. No change to be made on the cross head. All regulations or adjustments are made without the use of a tool to crack, face or furrow right or left hand burrs. Is warranted as represented, and is specially guaranteed to be more easily operated and quickly adjusted than any of its class, is convenient to set over spindles as machines are ample wide. Also a new improved patent diamond holder, the only perfect one. Other good improvements not mentioned. Sold on trial to responsible parties. Prices reasonable. Send for circular giving full description.

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N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

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PLEASE NOTE REPEATED ORDERS.

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ADDRESS,

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PITTSBURGH, PA.

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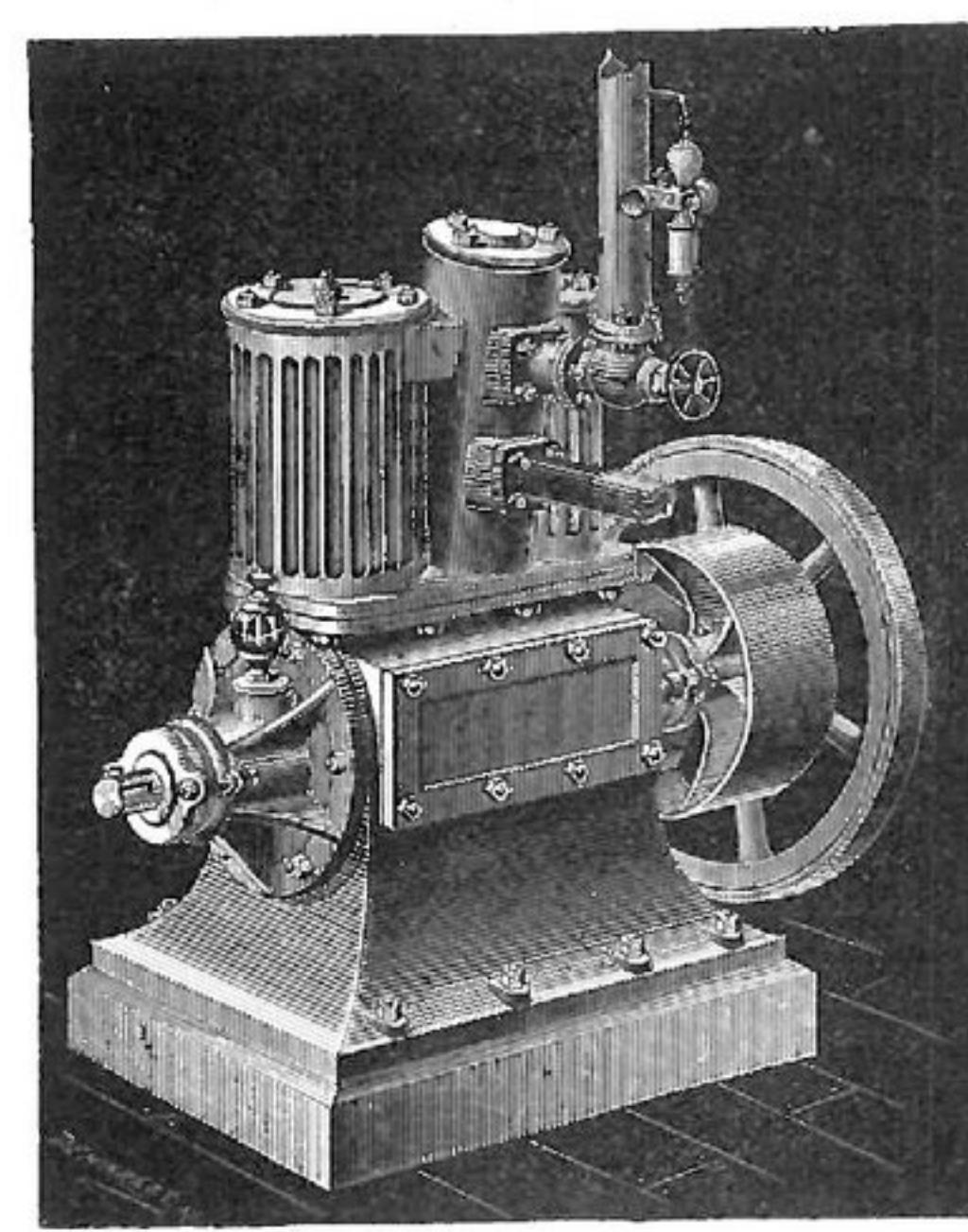
92 Liberty Street, New York.

14 South Canal Street, Chicago.

401 Elm Street, Dallas, Texas.

401 College Street, Charlotte, N. C.

53 S. Market St., Nashville, Tenn.



SALES FOR FEBRUARY, 1884.

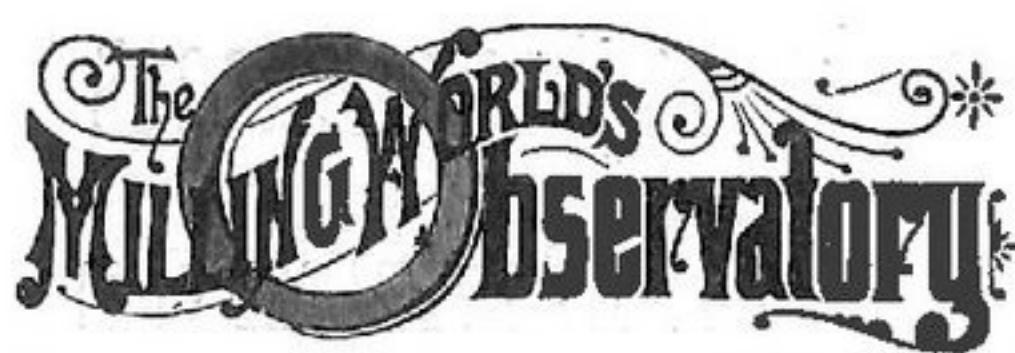
C. Arnold & Co., Flour Mill, Sterling, Kan.	H. P. 65	Albany Oil & Refining Co., Oil Mill, Albany, Ga.	30
Lynn Electric Light Co., Lynn, Mass.	50	Payne & Hammond, Cotton Ginning, Hammond, Tex.	30
" " " " " (2d order).	50	C. H. Howland, Electric Light, Los Angeles, Cal.	20
" " " " " (3d order).	50	Banks & Matthias, Chair Manufactory, Allentown, Pa.	20
Dallas Barrel & Woodenware Co., Dallas, Tex.	50	Chester Huntington, Machine Shop, New York.	20
Benjamin Eastwood, Machine Shop, Paterson, N. J. (2d order).	50	" order) " " " " " (2d order) 12	12
Benjamin & Bower, Marine Engine, Seattle, W. T.	50	Adams & Price, Machine Shop, Nashville, Tenn.	12
Geo. W. Moyer, Saw Mill, Altamonte, Fla. (3d order).	50	Burrell & Whitman, Manufacturers Tinware, Little Falls, N. Y.	12
Wilkinson & Cole, Planing Mill, Mountain Creek, Ala.	40	C. B. Lee, Machine Shop, Galveston, Tex.	12
Wilkinson & Cole, Planing Mill, Mountain Creek, Ala. (2d order).	40	R. M. McDonald, Machine Shop, Greenville, S. C.	8
A. Higley, Stamp Mill, Cleveland, O.	20	Charlotte Gas Co., Charlotte, N. C.	8
Siddall, Carroll & Co., Planing Mill, Calvert, Tex.	40	J. W. Shaffer, Machine Shop, Ottawa, Kan.	8
M. L. Basswell, Saw Mill, Blythewood, S. C.	30	E. B. Golet, Grist Mill, Mobile, Ala.	8
R. D. Wood & Co., Machine Shop, Philadelphia, Pa.	30	M. V. Monarch, Distillery, Owensburg, Ky.	8
Arkansas Oil Co., Oil Mill, Texarkana, Ark.	30	Cumberland & Passumpsic Mills, Cumberland, Me. (2d order).	4
M. M. Conger, Flour Mill, Mexico, Mo.	30	Washington Packing Co., Astoria, Oregon.	4
Pittsburgh Bessemer Steel Co., Pittsburgh, Pa.	30	Lowe & Isherwood, Laundry, Austin, Tex.	4
		Total, Thirty-five Engines.	975

SALES FOR MARCH, 1884.

Northern New York Manufacturing Co., Talc Mill, Governeur, N. Y.	H. P. 160	Brayton Petroleum Engine Co., Bridgewater, Mass.	20
Piedmont Manufacturing Co., Cotton Mill, Piedmont, S. C.	160	Texarkana Ice Co., Hot Springs, Ark.	20
Utah Electric Light Co., Salt Lake City, Utah.	65	S. A. Blasangaine, Saw Mill, Clanton, Ala.	20
Marshalltown Electric Light Co., Marshalltown, Ia.	65	Oakland Paper Co., Manchester, Conn.	20
Lombard, Ayers & Co., Oil Refinery, New York.	65	The Levett-Muller Electric Light Co., New Orleans, La.	20
Reynoldsburg Mining & Manufacturing Co., Reynoldsburg, Pa.	65	Geo. O. Baker & Co., Electric Light, Selma, Ala.	20
Russell & Erwin Mfg. Co., Machine Shop, New Britain, Conn.	50	Justice Bateman & Co., Elevators, Philadelphia, Pa.	12
Jackson Lime Co., Blount Springs, Ala.	50	W. B. Creight, Ginning, Winnsboro, S. C.	12
Givernaud Bros., Silk Mill, Homestead, N. J. (4th order).	50	Walter A. Taylor, Chemist, Atlanta, Ga.	12
Givernaud Bros., Silk Mill, Homestead, N. J. (5th order).	50	Peoples' Gas Light Co., Rutland, Vt.	12
Equitable Gas Co., New York.	50	Carrie Furnace Co., Electric Light, Rantburg, Pa.	12
" " " (2d order).	50	S. C. Brooks, Electric Light, Eau Claire, Wis.	12
" " " (3d order).	50	Okeechobee Land Co., Kissimmee, Fla. (2d order).	12
" " " (4th order).	50	May & Lackey, Ginning, Leander, Tex.	12
J. W. & E. Grove, Saw Mill, Fredericksburg, Pa.	40	J. B. Gray, Ginning, Georgetown, Tex.	12
Spring Lake Iron Co., Fruitport, Mich.	40	J. J. Barber, Ginning, Florence, Tex.	12
Neal Bros. & Brooks, Paper Mill, Lockport, N. Y.	40	Imray, Hirsch & Kaepel, Melbourne, Australia.	12
Barker & Hopkins, Planing Mill, Carrollton, Tex.	40	J. H. Robbins & Sons, Machinists, Selma, Ala.	12
Chesapeake & Ohio Elevator Co., Newport News, Va.	40	A. J. Mullin, Brick Yard, Selma, Ala.	12
Standard Underground Cable Co., Pittsburgh, Pa.	30	J. B. Pearce, Marine Engine, Portland, Ore.	8
C. G. Washburn & Son, Saw Mill, Shelby, N. C.	30	Amos Johnson, Marine Engine.	8
Austin Hydraulic Cement Co., Austin, Tex.	30	A. Hackstadt, North Topeka, Kan.	8
Cole & Frank, Ginning, Elm Creek, Tex.	30	Ilwaco Steam Nav. Co., Astoria, W. T. (2d ord.)	8
Philadelphia & Reading Coal and Iron Co., Reading, Pa. (5th order).	20	Steamer "Josie Harry," Electric Light, Memphis.	8
West & Renfrew, Ginning, Blanco, Tex.	20	R. Neptune & Co., Vincennes, Ind.	4
	20	E. D. Pearce, Portland, Ore.	4
	20	The Fort Wayne Organ Co., Fort Wayne, Ind.	4
	20	Evans & Roberts, Boiler Shop, Birmingham, Ala.	4
	20	Van de Poel Electric Light Co., Chicago, Ill.	4
	20	Total, Fifty-four Engines.	1,627

SALES FOR APRIL, 1884.

Government of New South Wales, Electric Light, Sydney, Australia.	H. P. 160	L. D. Martin, Drainage, Marmillion Plantation, La. (2d order).	30
Anson, Eldred & Sons, Planing Mill, Ft. Howard, Wis. (3d order).	125	T. S. Wilkerson, Drainage, Myrtle Grove Plantation, La.	30
Philadelphia & Reading Coal and Iron Co., Reading, Pa. (6th order).	80	Folse & Naquin, Drainage, Assumption Plantation, La.	30
John Carson, Saw Mill, New Tacoma, W. T.	80	Edmund M. Ivens & Son, Drainage, New Orleans, La.	30
Omaha & Grant Smelting & Refining Co., Omaha, Neb.	65	J. E. Thropp & Co., Ore Crusher, Edge Hill, Pa.	30
Lawrence Machine Co., Lawrence, Mass.	65	Howard Oil Co., Houston, Tex.	30
Portland Electric Light Co., Portland, Ore.	65	Walter Alford, Planing Mill, Bellville, Ont.	30
" " " (2d order).	65	F. Wohleb, Ginning, Cameron, Tex.	30
Portland Electric Light Co., Portland, Ore. (3d order).	65	F. H. Colthwaite & Co., Button Manufactory, Springfield, Mass.	30
Council Bluff Electric Light Co., Council Bluffs, Ia.	65	Wells & Ferguson, Ginning, Allen, Tex.	30
Beloit Straw Board Co., Paper Mill, Beloit, Wis.	50	Isaac Strachan, Flour Mill, Cressona, Pa.	30
Wm. E. Pierce, Woolen Mill, Allentown, R. I.	50	F. N. Burt Tannery, Ogdensburg, N. Y.	30
A. & V. P. Brow, Drainage, Providence Plantation, La.	50	O. Hymee, Drainage, Goldmine Plantation, La. (2d order).	28
L. Godchaux, Drainage, Mary Plantation, La.	50	R. C. Martin, Drainage, Albemarle Plantation, La.	20
J. H. Hymee, Drainage, Hymelia	50	J. W. Gullahor & Bro., Planing Mill, Coopers, Ala.	20
Foos & Barnett, Drainage, Shadyside, Plantation, La.	50	Aberdeen Electric Light Co., Aberdeen, Miss.	20
McKeesport Electric Light Co., McKeesport, Pa.	50	Emmor Camp, Saw Mill, South Strabane, Pa.	20
" " " (2d order).	50	M. Pierce, Spice Mill, Toronto, Ont.	20
James Kirk, Flour Mill, Winfield, Kan.	50	Rayford & Nickol, Ginning, West Station, Tex.	20
Thompson Houston Electric Light Co., St. Louis, Mo.	5		



Notes from the Mills.

St. Leon, Manitoba, is to have a \$10,000 oatmeal mill.

A 50-barrel roller mill is wanted at Gladstone, Manitoba.

Manitou, Man., is to have a 150 bbl. oatmeal mill this year.

The citizens of Westbourne, Manitoba, offer a bonus for a grist mill.

A. Consingo, Pleasant Hill, Mo., has bought an improved Case centrifugal reel.

J. T. Donovan, Lampesas, Tex., has bought a No. 1 single purifier of the Case Mfg. Co.

The Case Mfg. Co. have furnished Henry Beckman, Neligh, Neb., one No. 1 double purifier.

Brandon, Minn., has subscribed \$500 towards procuring a grist and saw mill combined at that place.

Holmes & Algood, Rome, Ga., have bought rolls, centrifugals, etc., of the Case Manufacturing Co.

The Amherstburg, Ont., flour mill has shut down while \$5,000 worth of new machinery is being put in.

Peter Schertz, Eldorado, Iowa, has bought two pairs of rolls with patent automatic feed, from the Case Mfg. Co.

The Deseronto, Ont., Flour Mills have just gone through a thorough overhauling and are running again, night and day.

Morris & Allbaugh, Marysville, Ohio, have ordered from the Case Mfg. Co. one pair rolls, with patent automatic feed.

Allis & Co., of Milwaukee, Wis., have shipped, a Gray noiseless belt roller mill to J. G. Schaap, of Grand Island, Neb.

J. K. Mullen & Co., of Denver, Col., have bought another Gray noiseless belt roller mill from E. P. Allis & Co.

The London Feed Company (not incorporated), London, Ont., has been dissolved. John Halliday continues the business.

The Bradford Mill Co., have one mill job in hand that calls for twelve pairs of Allis rolls in Gray's noiseless belt frames.

Syer & Mayhew, Thamesville, Ont., have added the roller process to their gristing mill. Improvements will cost \$5,000.

Ruffin, McDaniel & Co., of Carthage, Mo., recently bought two porcelain roller mills of E. P. Allis & Co., Milwaukee, Wis.

A. Hinman, of Perry, Ill., has ordered eight pairs of rolls, purifiers, scalpers, centrifugals, etc., for a full gradual reduction mill on the "Case" system.

Hammond & Benedict, Le Grand, Iowa, have ordered two pairs of rolls with patent automatic feed and one No. 2 double purifier from the Case Mfg. Co.

Richmond City Mill Works, Richmond, Ind., has recently bought six pairs of rolls and one 3-roll break machine, of the Case Manufacturing Company.

The Case Mfg. Co., will furnish J. H. Hooper & Son, Constantia, Ohio, one pair of rolls, one No. 1 single purifier and one "Case" improved centrifugal reel.

Hoover & Reasner, Halstead, Kan., have bought two additional pairs of rolls, with patent automatic feed, and one 4-reel bolting chest, from the Case Mfg. Co.

W. H. Tenney & Son, Georgetown, D. C., have ordered two pairs of rolls with patent automatic feed, from the Case Manufacturing Co., of Columbus, Ohio.

Topeka, Kan., has four first-class flour mills, the last one completed being the Crosby mill, being a thoroughly well built and efficient combined roller and stone mill.

The Case Mfg. Co., Columbus, O., have lately received orders from Kidwell & Goode, Elwood, Ind., for a complete outfit of breaks, rolls, purifiers, scalping reels, centrifugals, &c.

McLachlin Bros., at Paola, Kan., are now receiving bids for a new 125-barrel mill. They prefer to build a new mill rather than remodel the old mill they have now in operation.

C. H. Bayman, Covington, O., has ordered a "Little Giant" break machine and scalper, three pairs of rolls with patent automatic feed and one No. 1 single purifier from the Case Mfg. Co.

The mill at Waterville, Minn., is finally finished and is now turning out flour, and we are told that

a good quality of flour is made. The change to the roller system will make the mill a success.

L. Glass, of Ft. Atkinson, Iowa, has bought a No. 2, four-break, Gray reduction machine, and four pairs of Allis rolls in Gray's noiseless belt frames, all from Allis & Co., of Milwaukee, Wis.

A new species of worm is said to be ravaging the corn fields of McLean county, Ill. It is about an inch long, of a yellowish color, and of the diameter of a pin. Where is the state entomologist?

D. R. Raymond, of Osceola, Ia., has ordered of E. P. Allis & Co., a complete milling outfit, including ten pairs of Allis rolls in Gray's noiseless belt frames. It is to be shipped to Huron, D. T.

Jonas Fender & Bro., Millersburg, Ill., have contracted with Messrs. Allis & Co., for a four-break machine, four pairs of Allis rolls in Gray's noiseless belt frames, and complete outfit for their mill.

Mr. Nesbitt is putting rollers into his mill at Cowansville, Ont., and has also added some new bolts and other machinery. The mill is now claimed to be one of the best in the Eastern Township.

Jas. Clark & Co., Ogden City, Utah, are putting in 3 pairs of rolls, one No. 1 double purifier, one 2-reel bolting chest, scalping reels, centrifugals, etc., all furnished by the Case Mfg. Co., of Columbus, Ohio.

Duncan, House & Dawson, of Mt. Gilead, Ohio, recently purchased of E. P. Allis & Co., Milwaukee, Wis., a No. 2 Gray four-break reduction machine and four pairs of Allis rolls in Gray's noiseless belt frames.

We understand that Geo. V. Hecker & Co., of New York, employ in their new mill, eighteen pairs porcelain rolls mounted in Gray's noiseless belt frames. They were furnished by E. P. Allis & Co., of Milwaukee Wis.

A. F. Ordway & Son, Beaver Dam, Wis., have ordered from the Case Mfg. Co., three pairs of rolls with patent automatic feed, one No. 1 double purifier and 1 "Little Giant" break machine to be shipped to Hortonville, Wis.

The requirements of grain for Italy during 1884, will, it is estimated, be 50,000 tons greater than the excessive takings in 1883, and should this be the case, foreign competition may be productive of a further advance in price.

Buckhorn, Ont., is to have another mill. A responsible party has offered to build a good flouring mill, with three run of stones, for a bonus of \$200 cash and timber and stone for frame and foundation. The bonus is nearly all subscribed.

The low price of oats and the cheap rates of ocean freights are leading to an export movement of this grain to the Continent of Europe, principally to France, where the project of imposing an import duty on corn, oats, and barley is being agitated.

The H. B. grist mill at Edmonton, Man., is now running full blast and running out an excellent sample of flour. It is claimed that a still better quality could be made if really good, clean wheat could be procured. The company pays from \$1 to \$1.50 per bu. for wheat.

In the county of Westbourne, Manitoba, the acreage under crop last year was about 4,700 acres; this year it is about 7,000. In Gladstone municipality the acreage this year is 3,000 acres, an increase of about 1,000. The crops are looking better than at this time last year and are further advanced.

A. Campbell & Co., of Chatham, Ont., have their new flouring mill almost completed. All the latest improvements in the way of making the best flour have been adopted. The Geo. T. Smith Co., of Stratford, have the contract for the rolls, purifiers, etc. This will be one of the finest mills in Canada.

Business at Winnipeg, Man., mills has shown considerable improvement during the past month. McMillan's mill delivered, one day recently, over 1,000 sacks representing one day's orders. The outlook for the present month is bright, as railway and local works will cause a large local consumptive demand.

The Chicago circular of L. Everingham & Co., June 3, says: "The average stock of wheat in store here on June 1 for 10 years was 3,331,000. The average stock at same time for five years was 4,860,000 bushels. The largest stocks in 16 years on June 1 was 7,733,000 in 1880, 5,840,000 in 1883, and 7,033,500 to-day."

The quickest time ever made at an elevator is said to have been that at the Rock Island "A" house, Chicago, on Saturday, when the monster ship "Golden Age" was loaded with 85,000 bushels of corn in two hours and fifteen minutes.

Such rapid time has never before been made by any elevator in America.

At Dacota, Ill., May 31, fire destroyed the Chicago, Milwaukee & St. Paul depot and Jacob Williams' elevator. There were about 15,000 bushels of grain in the elevator, and the insurance on the grain and elevator was but \$5,000. The depot was also insured. The total loss is in the neighborhood of \$12,000.

A 200-barrel mill is soon to be built at Mandan, Dak., under the control of a company, of which H. J. Burton is the prime mover. In connection with this mill an 80,000-bushel elevator will also be erected. The situation is regarded as favorable, as the facilities for procuring plenty of good wheat are immediately at hand.

The reports of the wheat crop throughout the State of Minnesota are unanimous as to its present good condition. There was a general rain throughout Minnesota and Dakota during the last week of May, and, although it may have caused some temporary inconvenience, it was generally beneficial in its results.

The Chicago grain and provision firm of McCormick, Adams & Co., so long and favorably known, having been dissolved by the death of Mr. Cyrus H. McCormick, will continue under the firm name of Cyrus H. Adams & Co. The members of the new firm consist of Cyrus H. Adams, Hugh L. Adams, and Edward S. Adams.

Mr. Stephen Nairn, of the late coal firm of Messrs. A. & S. Nairn, Toronto, is removing to Winnipeg. He will engage in the oatmeal milling in that city, a business with which he is thoroughly acquainted, and will manufacture for both the local market and for export. Mr. Nairn carries with him an excellent reputation and the good wishes of a host of friends.

The Mobile Price-Current of May 31, says: Good and general rains were reported throughout the interior during the early part of the week, with clear and warm weather the latter part. The condition of the crops, with the exception of lateness, is quite satisfactory and the prospect is promising. There was some apprehension of damage from too much rain, but the favorable change in the weather has dissipated such fears.

The Erie canal traffic for the fourth week of May shows a slight gain when compared with the corresponding period of last year. By many it was thought that the recent financial disturbances would have the effect of retarding canal traffic; but the contrary has been the result, however. The average prices for carrying grain from Buffalo to New York during the past week have been: Wheat, three and five-eighths cents, and corn, three and a half cents.

We understand that the Richmond City Mill Works, of Richmond, Ind., have recently placed orders with E. P. Allis & Co., of Milwaukee, Wis., for twelve pairs of Allis rolls in Gray's noiseless belt frames for the mill of A. R. Logan & Co., Shelbyville, Ky., six pairs of the same for J. A. Burns, New Providence, Ind., ten pairs of the same for J. B. Little, of Franklin, Tenn., and one of the same for another of their customers, making a total of twenty-nine pairs.

At Galt, Can., June 4, the oatmeal mill, owned and operated by the Galt Milling Company, was discovered to be on fire. The main body of the building was completely gutted, nothing being left but the stone walls and drying kiln. The insurance will probably cover the damage. Insurance on stock, \$14,000; on building, \$7,000. The insurance is divided among the following companies: Hand-in-Hand, \$2,000; Gore District, \$3,000; Waterloo Mutual, \$2,000; and Mercantile of Waterloo, \$4,000.

A canvass has been made—by one of the railroad companies—of the acreage of wheat in the seven counties northwest of Sioux Falls, with this result: Brookings county, 100,000 acres; Kingsbury, 70,000; Beadle, 50,000; Spink, 60,000; Clarke, 50,000; Codington, 125,000; Hamlin, 75,000. It is estimated that these half million acres will produce nine million bushels of wheat, and that the counties south of these have much larger acreage and will yield still more. At this rate the estimate of 35,000,000 bushels of wheat for Dakota will be much too low. It is believed that the yield will average higher per acre than for several years.

The grain merchants of Montreal, says the New York *Commercial Bulletin*, are entitled to sympathy in their endeavors to obtain free transportation on the canals, so as to enable them to retain at least a portion of the East-bound business which the Erie is absorbing; but we do not see what good the abolition of the canal tolls is going to do them unless they can corner or control ocean freights; the steamship companies, with a quick eye to business, having met reduced canal tolls with a corresponding increase in their charges; so that what the grain merchants have gained in one

direction they have lost in another. We do not see, however, that there is any remedy for it.

In a recent report by Consul Griffin, at Auckland, an interesting description was given by him of a great wheat, sheep and cattle raising farm in New Zealand. It contains 56,000 acres, a large portion of which has been brought into cultivation by the enterprising proprietor, Mr. J. C. Firth. This estate is in many respects far more remarkable than the famous Dalrymple farm in Dakota. Fifteen years ago it was wild country, covered with a thick growth of fern and tree scrub, and supported only a few head of Maori ponies. Every acre of it had to be cleared, the land "sweetened" by cultivation and the fern eradicated. This last is the most difficult task in the way of practical agriculture in the northern part of New Zealand, where there are no native grasses, and pastures must be created by patient labor and capital.

Most of the insurance companies doing business in the Northwest have agreed upon a new schedule of rates affecting flour mill risks, which will become operative on the first of August next. A circular concerning the new schedule says the past ten or fifteen years have witnessed the introduction of important changes in the process of converting wheat into flour; and that these changes, in connection with other causes, have operated disastrously to underwriters with respect to the ratio of losses incident to the flouring mill hazard. It is said that the application of the new schedule to mills of the latest and most approved construction will affect current rates but slightly, and in many cases not at all. With less modern mills the advance in rate will be more manifest, but the circular remarks. "A material part of such advance may be avoided in most cases by millowners making changes that can be effected at a comparatively trifling cost."

The *Farmers' Advocate* says: A recent circular from the Bureau of Industries contains statements relating to the state of the crops in Ontario. The condition of the fall wheat, on the whole, is much more encouraging than it was a year ago, but there is a decrease of fall wheat acreage. The weather has been favorable, and has brought to life many apparently dead fields. In the Lake Erie counties there is prospect of an average crop. In the Lake Huron counties the reports are not so satisfactory, although the light soils and well drained clay lands have escaped damage. The average of these counties is estimated to be from one-half to two-thirds of a full crop from the acreage sown. The wire-worm is reported in Moore township, Lambton county. There are good and bad reports from the Georgian Bay counties, most of the damage being attributed to late sowing. One report from Innisfil, county Simcoe, mentions the Hessian Fly, although not causing serious damage. A full average crop is expected from the west Midland counties, Perth being the least encouraging. The Lake Ontario border is extremely encouraging. The reports from the St. Lawrence and Ottawa districts vary considerably, but, on the whole, they are not very flattering, and the reports from the East Midland counties cannot be said to be extra encouraging. The wheat, however, is making wonderful progress, and farmer's expectations may yet be more than realized.

The following millers have put in roller mills, purchased from Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.: D. P. Barker, Sparta, Ill., a Gray's noiseless roller mill; C. A. Gambrill Mfg. Co., Baltimore, Md., ten pairs Allis rolls in Gray's noiseless belt frames; S. B. Pierson's Sons, Lawrence, Kan., four pairs porcelain rolls in Gray's noiseless belt frames; Wright Bros. & Co., Greenville, Mich., a Gray's noiseless belt roller mill; Gehlen Bros., Lemars, Iowa, a Gray's noiseless belt roller mill; W. H. Ridendaugh, Boise City, Idaho Territory, two pairs porcelain rolls; Curtis & Disbrow, Hillsdale, Mich., a Gray noiseless belt roller mill, Gray centrifugal reels, etc.; La Dorr & Co., Pleasant Hill, Ill., three pairs Allis rolls in Gray's noiseless belt frames; Victoria Flour Mills Co., St. Louis, Mo., a Gray's noiseless belt roller mill; J. H. Catron, Nebraska City, Neb., a Gray's noiseless belt roller mill; Moneux Bros., Monroe, Iowa, a Gray's noiseless belt roller mill; Jno. Ream, Hagerstown, Md., two pair Allis rolls in Gray's noiseless belt roller mill frames; Jno. K. Mullen & Co., Denver, Col., five pairs Allis rolls; F. J. Schupf, Marshall, Mo., five pairs Allis rolls in Gray's noiseless belt frames; Jno. W. Kauffman, St. Louis, Mo., thirty-four pairs Allis rolls in Gray's noiseless belt frames, together with all the necessary machinery to increase the capacity of the "President Mills" at Bethalto, Ill., from 600 bbls. per 24 hours to 1200 bbls. Messrs. Allis & Co. built the President Mills last year, and it has given such good satisfaction that the mill will be doubled in capacity for the coming season to keep up with its orders.



A tool for Cutting, Leveling and Polishing the Furrows and Face of Millstones.

Eight inches long, $2\frac{1}{2}$ inches wide, $1\frac{1}{2}$ inches thick. Received the highest and only Award given to Polisher at the Millers' Exhibition, Cincinnati, Ohio, June, 1880.

For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$3.50. Satisfaction guaranteed, or money refunded. Address

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HOWE'S Challenge Sample Envelope
The simplest, cheapest and best sample package in the world for sending samples of flour, grain, seeds, etc.
No. 0, hold 1 oz. sample, 65c pr 100
No. 1, " 2 to 3 " 65c " 100
No. 2, " 4 " 6 " \$1.20 " 100
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Sent by mail, postpaid, to any part of U. S. Sample sent free. Address, Howe Pattern & Manfg. Co., 448 Bagg Street, Detroit, Michigan.
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PROVED BY TWO YEARS' CONSTANT USE.

GRAY'S PATENT

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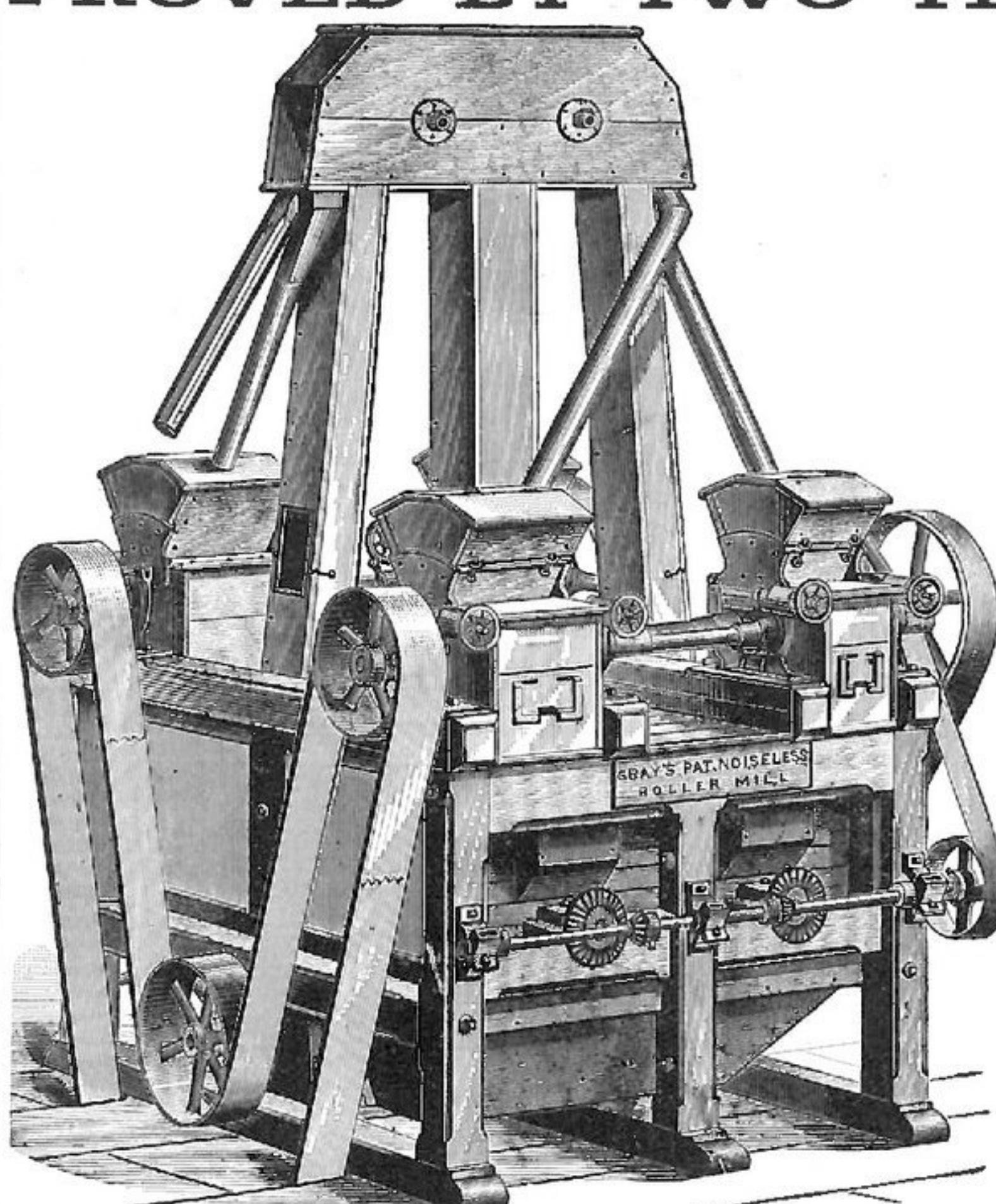
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FOR SMALL MILLS

*Economizes Room,
Takes Less Power,
Saves Millwright Labor.*

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EDW. P. ALLIS & CO.
RELIANCE WORKS,
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Buckwheat Refiners & Portable Mills



THE POSITIVE ADJUSTMENT
AND AUTOMATIC
MIDDINGS MILL
Is Strictly Self-Protecting
*The Best Adjustment in
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And the only
Perfect Granulator
Grinds Cool, Self-Oiling, Great
Saving of Power.
Simplicity and Durability Combined.

Satisfaction Guaranteed on all our Goods. Send for Descriptive Circular, giving Prices, Sizes, Terms, etc.

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LUBRICATORS & SOLIDIFIED OIL*

The most economical, perfect, practical, simplest, cheapest and elegantly finished Lubricators ever put on the market. One million sold within a couple of years. The Barthel Solidified Oil or Lubricating Compound is used with the Lubricators exclusively. Whoever has once tried this Lubricant will never again use oil or any other lubricating compounds. Send for Illustrated Catalogue.



BUCKWHEAT BUCKWHEAT

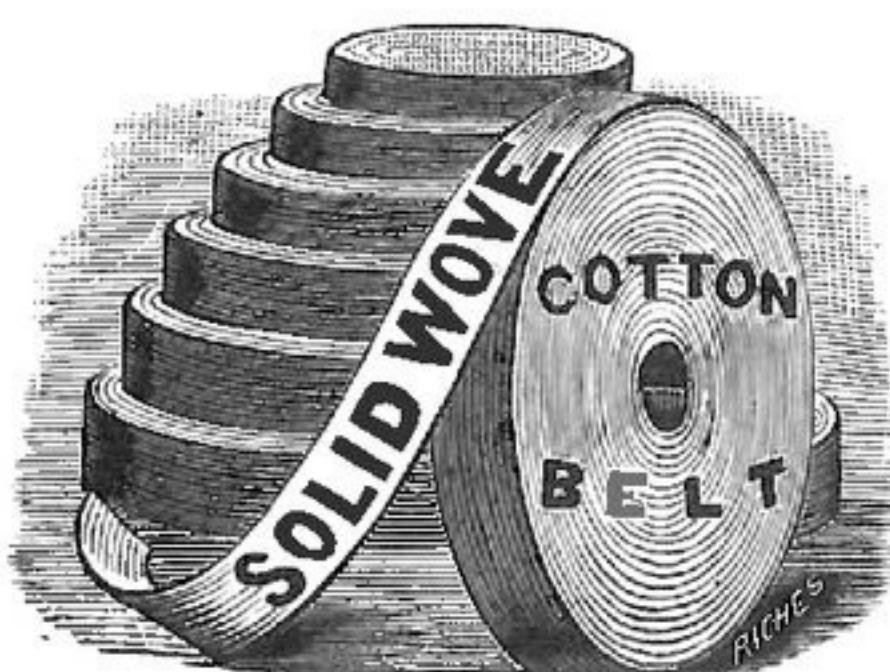
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The Odell System for Buckwheat.

Nothing Like It.

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Stilwell & Bierce Manufg. Co., Dayton, Ohio.



MILL SUPPLIES { *Everything Used in
a Mill of Every Kind
Always on Hand.*

Leather
Cotton
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BELTING, BOLTING CLOTH

ELEVATOR BUCKETS, BOLTS, MILL IRONS, &c.

Prices Close and Quality the Best.

The Case Mfg. Co., Columbus, Ohio.

ROLLS RE-GROUND

And Re-corrugated to order. Our Machinery for this purpose is very accurate. Can do work promptly.

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BRAZILIAN FINANCIAL CONDITIONS.

THE present state of affairs in Brazil is critical in the highest degree, and a final collapse, apparently, is not far distant, says a recent issue of *Bradstreet's*. Although the country has been steadily drifting toward this crisis for many years, and has even been suffering from it during the last two or three years, the crash has been kept off and the country allowed to drift on toward inevitable bankruptcy. Every effort to call attention to the danger has, until recently, been talked down as pessimism and enmity. Every indication of waning industry or financial difficulty has been ascribed to temporary causes, like the Paraguayan war, an abolition, or short crops. Whatever the difficulties or their necessities, the Brazilian people have been fatally blind both as to the real causes and their ultimate results. They have pinned their faith to the belief that the natural elements of wealth and prosperity in their country will in some way bring them through safely, and so they have been quite content to drift with the tide. In all emergencies England has supplied them with money, and English speculators have promptly united to preserve their credit. To-day, however, the circumstances are somewhat changed. The last loan has not been taken up like its predecessors. Brazilian finances have been severely criticised in London, and Brazilian credit has suffered a reverse. More than that, an internal loan cannot now be placed, and for the first time in many years the Brazilian credit is made to feel the pains and penalties of its extravagance and maladministration.

NOTES.

The firm of Mr. Luther's mill furnishing establishment gives as a list of contracts for complete roller plants closed during the first three months of the present year: thirteen in Germany, nine in Belgium, three in Holland, one in England, and one in France.

A recent issue of the *Galaxy Express* contained a long letter by Mr. T. Palmer, of Galway, upon the "Impending ruin of the flour milling trade," advocating "Fair trade," by the imposition of a duty on flour, of which two large cargoes have recently been imported at Galway from America.

The millers and bakers' school at Simmering, Vienna, opened its new term on May 15 under the most favorable auspices with a full number of students from Austria, Hungary, Germany, Switzerland, Denmark, Sweden and Russia. The benefits to be derived from such schools are beginning to be appreciated more and more.

The Paris Societe d'Acclimation lately gave a banquet composed of articles of food, which were derived entirely from countries other than France. Many of the dishes were exceedingly curious. There were some American articles, such as California salmon and Canadian moose, while curious items were Tonquin pork, with Annamite sauce, Chinese yak, kangaroo stew, holy pheasants, ostrich eggs, and American shrimps.

The imports of France during the first half of May have included 256,000 hect. of wheat, against 395,000 hect. in the same period of 1883. Demand seems to be in excess of supply, and at Marseilles stocks have declined on the week from 477,764 quintals to 437,051 quintals. The wheat trade has maintained a steady bearing despite the fall at New York. The demand for home-grown wheat, as well as for the finer varieties of foreign, is very fair. It is only the cheap foreign sorts that prove almost impossible of sale. The flour trade shows extremely little change from a week ago, but the stocks at Paris show a diminution, and the situation is to that extent improved, from holders' point of view.

Much has been said of the undeveloped mineral riches of Siberia, but it now appears that Russia possesses similar treasures even more completely unknown in other part of her Asiatic possessions. The two successive surveys made in the Lien-Shan

Mountains, which divide Russian Turkestan from China, have discovered a very promising yield of petroleum at a spot which by certain indications would seem to have been (like Baku on the Caspian Sea) an ancient centre of fire worship. Iron and copper were found in great quantities, and coal likewise, although the latter was of inferior quality, very much like that of the Caucasus. Silver was also found, but in small quantities and mixed with a good deal of lead. Traces of gold were abundant, though its presence was rendered practically useless by the want of fuel and of quartz-crushing machinery. Finally, the tract lying toward the head-waters of the Oxus, on the extreme southern limit of Russia's territory, contains mines of rubies and lapis lazuli which are pronounced by Russian experts to be among the richest in the world.

The British Consul at Galatz writes that vigorous endeavors have been made lately to improve the agriculture of Roumania. Credit establishments have been formed for making advances to farmers, and annual exhibitions have been instituted in the different districts, where prizes are given for the best exhibits of cattle and agricultural and industrial products. A company has been formed with the view of resuscitating the silk industry, which had fallen into decay, although cocoons, both in the raw and manufactured state, used at one time to form an important element in the Roumanian export trade to France and to Italy. The petroleum deposits are now being worked on more scientific principles in several quarters, with promising results. A match factory and tanneries have been established; a company has been formed for the manufacture of paper; endeavors are being made to improve the quality of Roumanian wine; an establishment for making brandy has been founded during the past year, and has produced very creditable specimens. In fact, an activity is displayed throughout which was not observable prior to the Russo-Turkish war.

"Paternal Government" in Austria has just manifested itself in a shape which will be apt to elicit applause from such of our own countrymen (among the Trades Unions) who believe it is the function of the State to regulate hours of labor, wages, etc., etc. We allude to the Factory bill, which has passed almost unanimously the Lower House and is certain to become a law. It is a measure which threatens to revolutionize the industries of the whole country. It provides that workmen in factories shall not be occupied for more than eleven hours out of twenty-four, and shall have at least one hour's interval for meals. The Minister of Commerce, on the advice of the Chambers of Commerce, may permit, in certain cases, one additional working hour daily, the schedule of these exceptions to be revised triennially. The "normal work day," as it is technically called, has hitherto existed only in Switzerland, and its introduction into Austria must seriously diminish its power of competition with other countries, and particularly with Hungary, where no such restriction of labor exists, and whose manufactures, as is guaranteed by the Commercial Treaty, may freely enter Austria.

The lessees of house property in Shanghai have in a body addressed the landlords of the city for a reduction of rent, and in their petition draw a very gloomy picture of the state of business affairs there, as well as the prospects of the immediate future. They say: "The trade of Shanghai has undergone a severe shock within the past year; and financial distress has spread to all classes, not only in Shanghai, but through the Empire generally. Serious failures have occurred amongst the largest and most wealthy merchants, many of whom have succumbed to the distress and been obliged to close their business. There were formerly eighty to ninety banking houses; this year scarcely twenty houses have re-opened since the Chinese new year. Moreover, in every part of the country the harvests have been bad, and hitherto fruitless Chinese mining operations have dissipated several millions of taels. The French war in Annam, again is a source of constant alarm. The shock has been as sudden as it was unexpected, and has entailed much distress amongst the Chinese residents of the settlements. For all these reasons, out of every ten kinds of business and trade, there is not one with fair prospects in the future."



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ONE, TWO, OR FOUR BREAKS IN A SINGLE FRAME

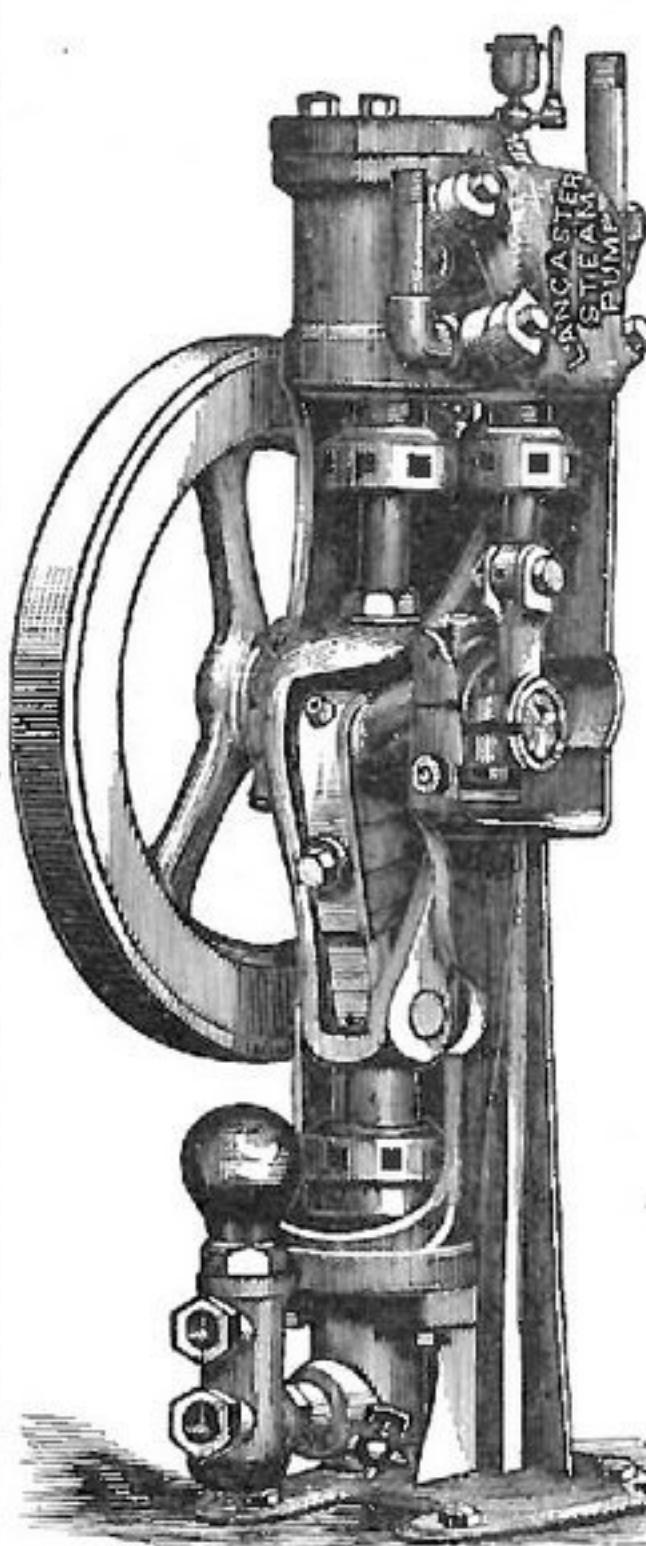
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Steam Pumps, - \$35 and up.
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THE BEST IN THE MARKET!

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THE LANCASTER STEAM PUMP CO.
AND MACHINE WORKS,

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RE-GRINDING AND RE-CORRUGATING ROLLS!

We have recently provided ourselves with special machines for this purpose, and are prepared to execute all orders promptly.

SEND IN YOUR DULL ROLLS.

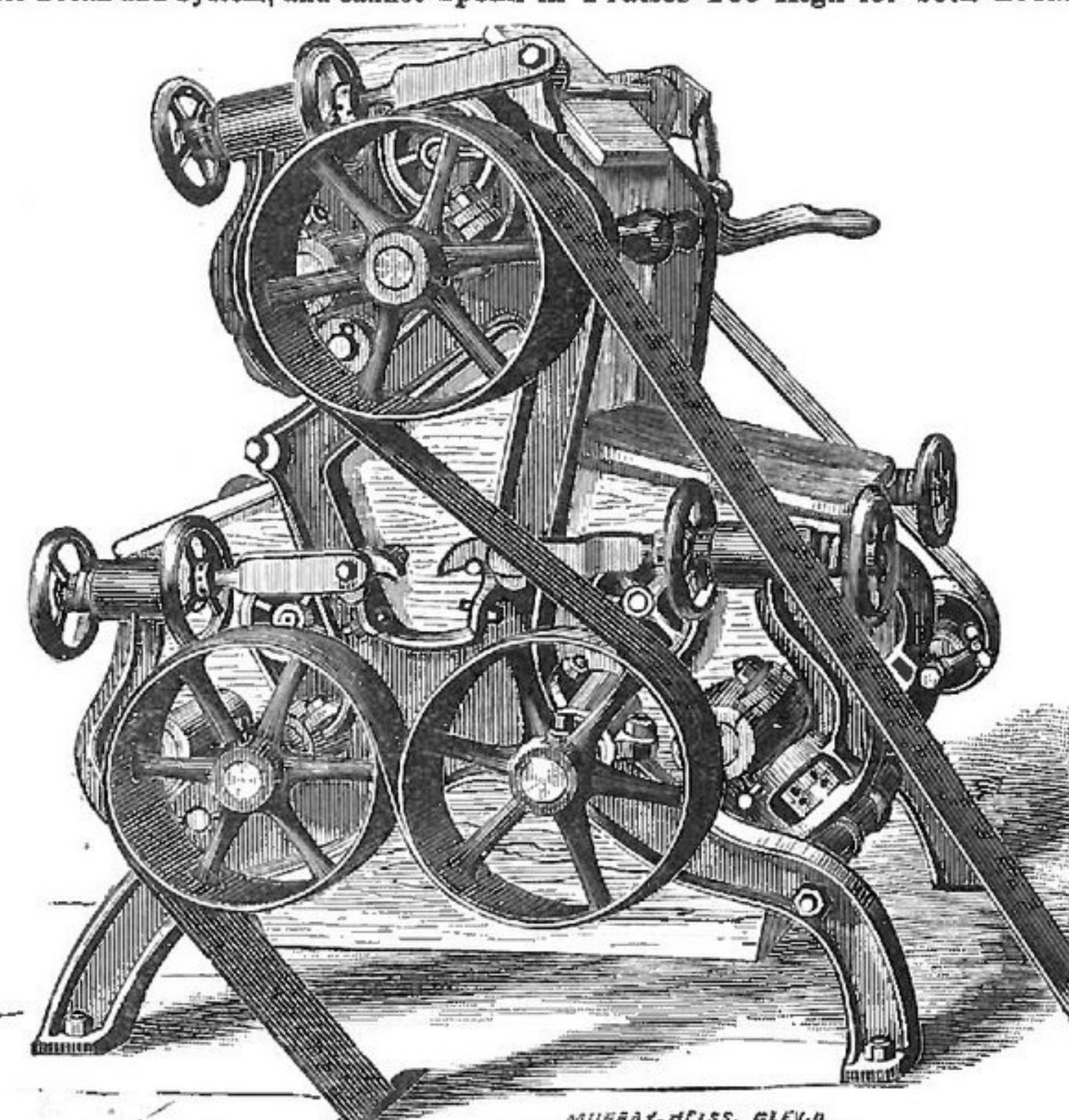
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THE RIDER ANTI-LOW GRADE WHEAT BREAK AND THE MILLER ROLLER MILLS.

We have had unparalleled success with our mills, and are putting in the Rider System, and changing some of the most Celebrated Mills. The leading mills of Ohio, Messrs. Hardesty Bros., Canal Dover, Ohio, are using the Rider Break and System, and cannot Speak in Praises Too High for both Break and System.



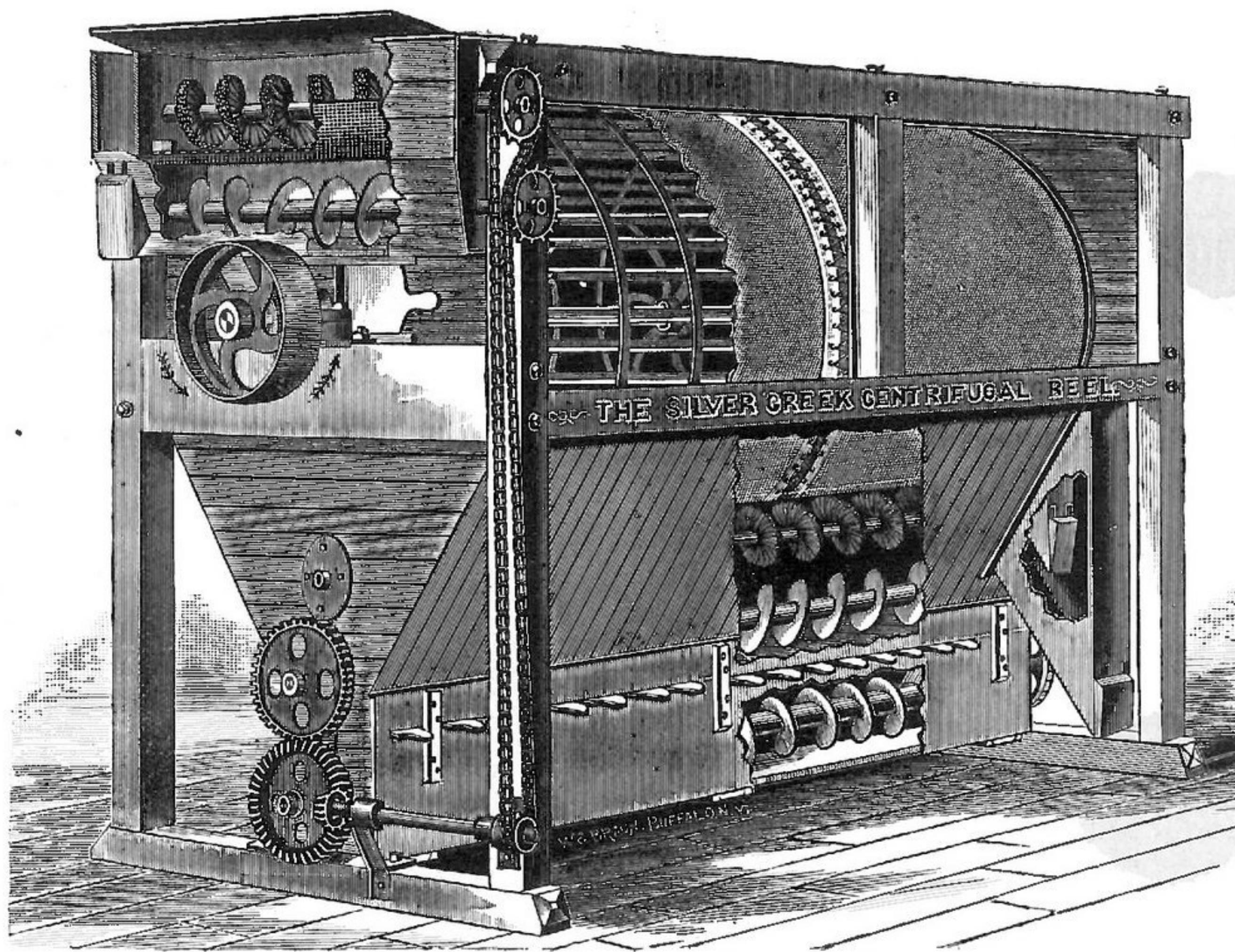
We can make small mills equal to large ones. Write us for Rock Bottom Prices, and Undoubted Reference of parties using our Breaks and Rolls. By adopting our system you can save money, also save from 8 to 10 per cent low grade over other systems, and keep both quality and yield up to the best.

THE MILLER CO., CANTON, O.

Silver Creek Centrifugal Bolting Reel

MADE IN SIX SIZES.

Patented Oct. 11th, 1870; Dec. 20th, 1870; Nov. 4th, 1882;
Feb. 6th, 1883; July 3d, 1883; Sept. 25th, 1883.



Recent Patented Improvements Enable me to Guarantee Capacity

and Absolutely Clean Tailings Free from Flour.

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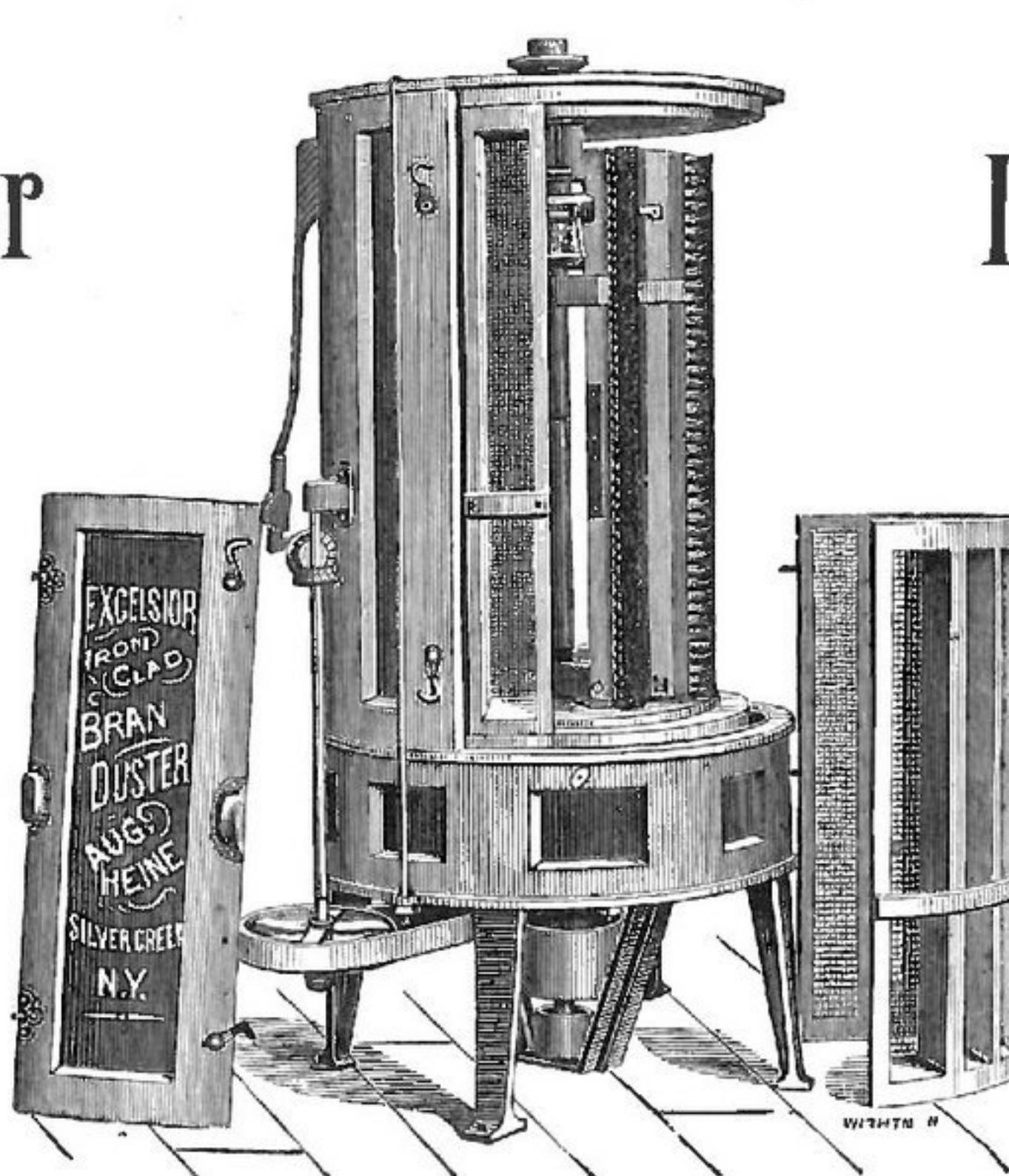
MADE IN SIX SIZES.

AUGUST HEINE,
(Successor to HOLCOMB & HEINE.)
EXCELSIOR WORKS, SILVER CREEK, N.Y.
—] MANUFACTURER OF [—
THE SILVER CREEK CENTRIFUGAL BOLTING REEL,
—] AND [—
EXCELSIOR IRON CLAD BRAN DUSTER.

EXCELSIOR Iron Clad Bran Duster

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With Improved Iron Casing is adjustable while running, and, to meet requirements, is made in five different sizes. More than three thousand of them are in actual daily use, and in spite of strong competition they easily maintain their absolute supremacy.



EXCELSIOR Iron Clad Bran Duster

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With Improved Iron Casing is adjustable while running, and, to meet requirements, is made in five different sizes. More than three thousand of them are in actual daily use, and in spite of strong competition they easily maintain their absolute supremacy

HAS BEEN AWARDED
FIRST AND ONLY PREMIUM
AT THE
Millers' International Exhibition.



Office of THE MILLING WORLD.
Buffalo, N. Y., June 11, 1884.

It is reported that the Kenesaw, Georgia, mills will begin grinding new wheat this week, which, as the New York *Commercial Bulletin* says, is early, but still the season when ample supplies of new wheat will be obtainable in all markets is rapidly approaching. Country advices indicate an increased movement of wheat. The crop and weather advices are unanimously propitious. This is the very general rule. The occasional "cheat" and "fly" and "wet" dispatches are lost sight of in the abundance of the better sort. Exporters are withdrawing from the market. When local millers paid 99c for No. 2 Chicago spring wheat delivered—the highest yet paid—the bullish strain of the market relaxed. It became reported about that the longs had unloaded at Chicago. That the local element was trying to sell all they could was very evident from the conduct of the market here. That it was "boomed up" a little to begin with for the purpose of selling was also apparent. There has been, continues the *Bulletin*, more speculation to-day, (Tuesday). After an advance of $\frac{1}{4}$ @ $\frac{3}{4}$ c, the bears sold the market steadily, and finally closed it weak at a decline of $\frac{3}{4}$ c for June, $\frac{1}{4}$ c for July, $\frac{3}{4}$ c for August and $\frac{3}{4}$ c for September.

The New York stock of wheat is 120,401 bushels larger than it was a week ago, 1,099,044 bushels smaller than it was a year ago, and 51,582 bushels smaller than it was two years ago. The stock of No. 2 red winter wheat is now 1,264,864 bushels—a decrease of 36,467 bushels from last week's figures.

The best spring wheat flour that comes to New York can be bought at \$6.50 in round lots. The best winter wheat flour occasionally sells at \$6.75 but to sell any quantity of it \$6.50 would probably be discovered to be top notch. The demand for the trade brands is very slow. Buyers have the advantage in grading, if not actually getting shaves in the price. Local millers paid 99c for Chicago spring wheat delivered, which is an advance over anything they have paid yet, but they are selling at \$5.05 and asking \$5.10 @ \$5.15 at the close. Finally, however, the whole market is weak-kneed, because wheat is selling off here and at the West. There is no particular feature to the doings of the exporters, and but very little energy to their movements. Rye flour is dull but unchanged. Corn goods are quiet but steady. Bag meal is quiet and easier. Mill feed is quiet and rather easier.

FOREIGN EXCHANGE.

The market for sterling fairly steady, although the supply of commercial bills increased somewhat. The posted rates closed at 4.85 @ 4.85 $\frac{1}{2}$ for sixty days, and 4.87 @ 4.87 $\frac{1}{4}$ for demand. The actual rates ranged: At sixty days' sight, 4.84 @ 4.84 $\frac{1}{2}$; demand, 4.86 @ 4.86 $\frac{1}{2}$; cables, 4.86 $\frac{1}{2}$ @ 4.87, and commercial, 4.82 $\frac{3}{4}$ @ 4.83. Continental exchange quiet and steady; francs, 5.19 $\frac{3}{4}$ @ 5.18 $\frac{3}{4}$ and 5.16 $\frac{3}{4}$ @ 5.16 $\frac{1}{4}$; reichsmarks, 94 $\frac{3}{4}$ @ 95 and 95 $\frac{1}{4}$ @ 95 $\frac{3}{4}$; guilders, 39 $\frac{1}{2}$ @ 40 $\frac{1}{2}$. The closing posted rates were:

	60 days.	30 days.
London.....	4 85	4 87
Paris francs.....	5 17 $\frac{1}{4}$	5 15
Geneva.....	5 18 $\frac{1}{2}$	5 14 $\frac{3}{4}$
Berlin, reichsmarks.....	95	95 $\frac{1}{2}$
Amsterdam, guilders.....	40 $\frac{1}{2}$	40 $\frac{1}{2}$

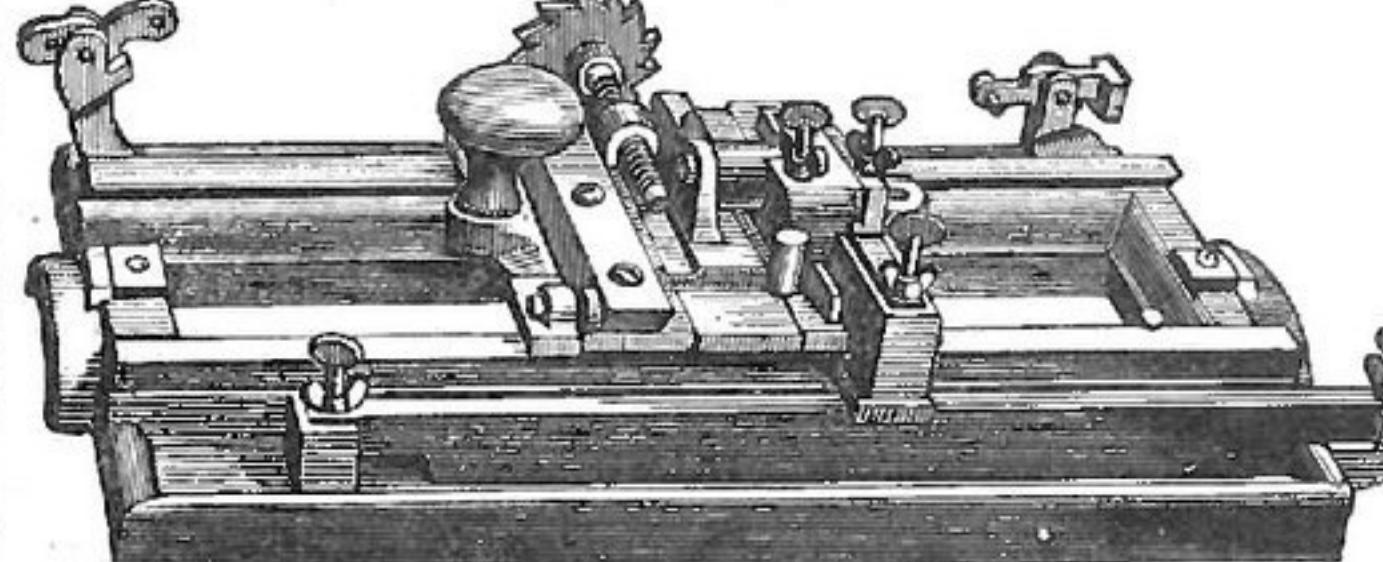
BUFFALO MARKETS.

FLOUR—City ground clear Duluth spring \$5.25 @ 5.75; straight Duluth spring, \$5.75 @ 6.00; amber, \$5.75

DUFOUR & CO.'S CELEBRATED BOLTING CLOTH.

FIRST AND ONLY PREMIUM
OVER ALL COMPETITORS!
PURCHASE ONLY
FROM RELIABLE DEALERS.

HOOVER'S IMPROVED DIAMOND MILLSTONE DRESSING MACHINE. ADAPTED TO ALL KINDS OF DRESSING.



No. 1, to face and crack	\$25 00
No. 2, to face, crack, dress furrows, and will dress any size stone.....	45.00
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Will do as good work, and is more easily adjusted, than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.

C. S. HOOVER, Patentee and Manufacturer, 409 East King St., LANCASTER, PENN.

PORTABLE FORGES

Empire Portable Forge Co.
Cohoes, N. Y.
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THE BEST AND CHEAPEST COB CRUSHER

IN THE WORLD.

Steel Being Used in its Construction.

PRICE, 30.00.

RIGHT-HAND MILL.

CAPACITY 75 BUSH. PER HOUR.



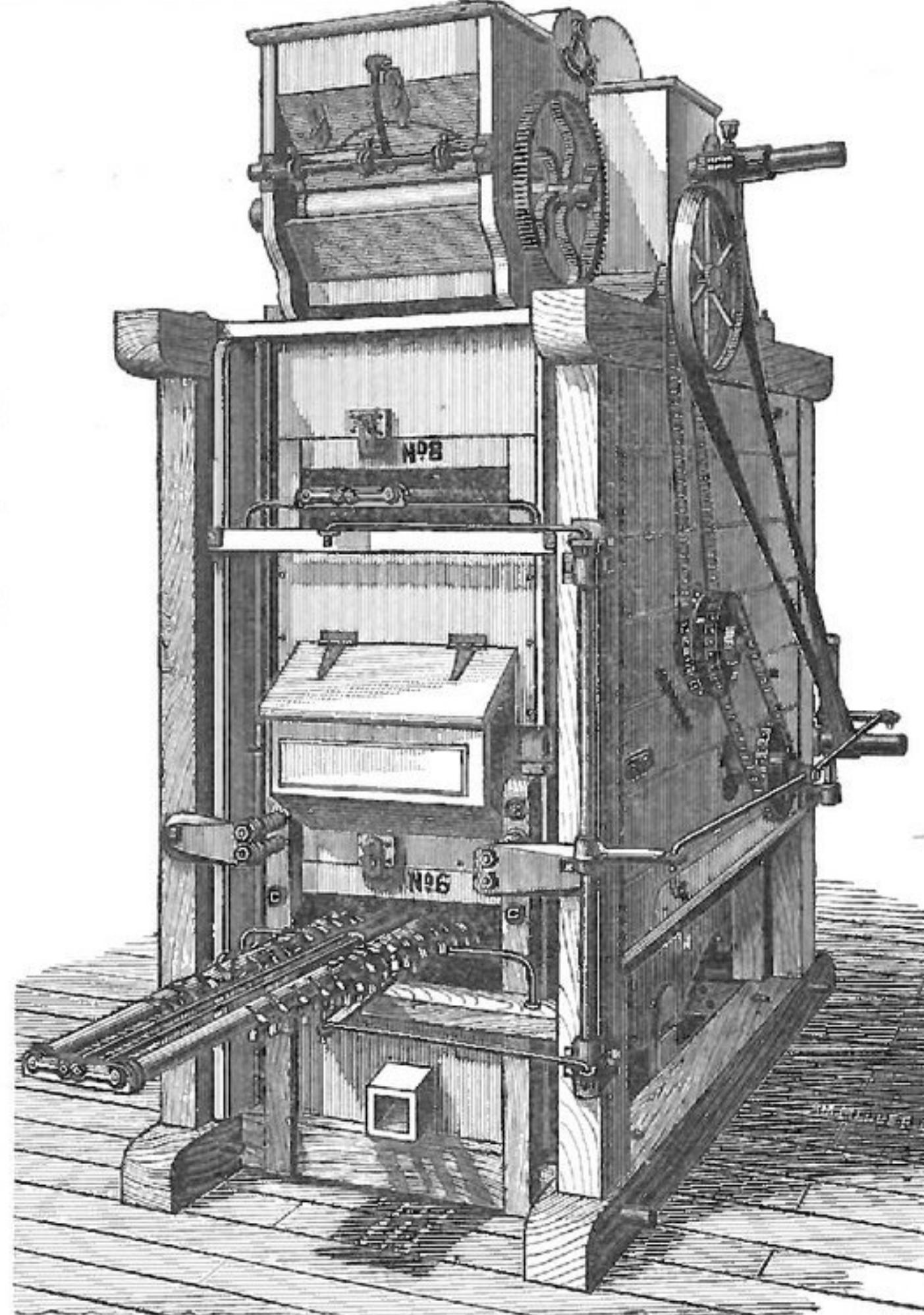
Thousands of these Crushers are now in use, and giving entire satisfaction.

Please Send for Circulars.

R. C. McCULLEY, LANCASTER, PENN.

THE DOUBLE CURRENT PURIFIER

Has the Automatic Separating Feeder. It takes out the heavy specks between each number of cloth. It settles the heavy dust and lifts the light fuzz into the dust room. It has "Collins" Automatic Cloth Cleaner. Licensed under all conflicting patents. Descriptive circulars and prices on application. Mention this paper



J. T. Walter, Sole Manufacturer, Easton, Pa.

KEYSTONE CENTRIFUGAL REEL

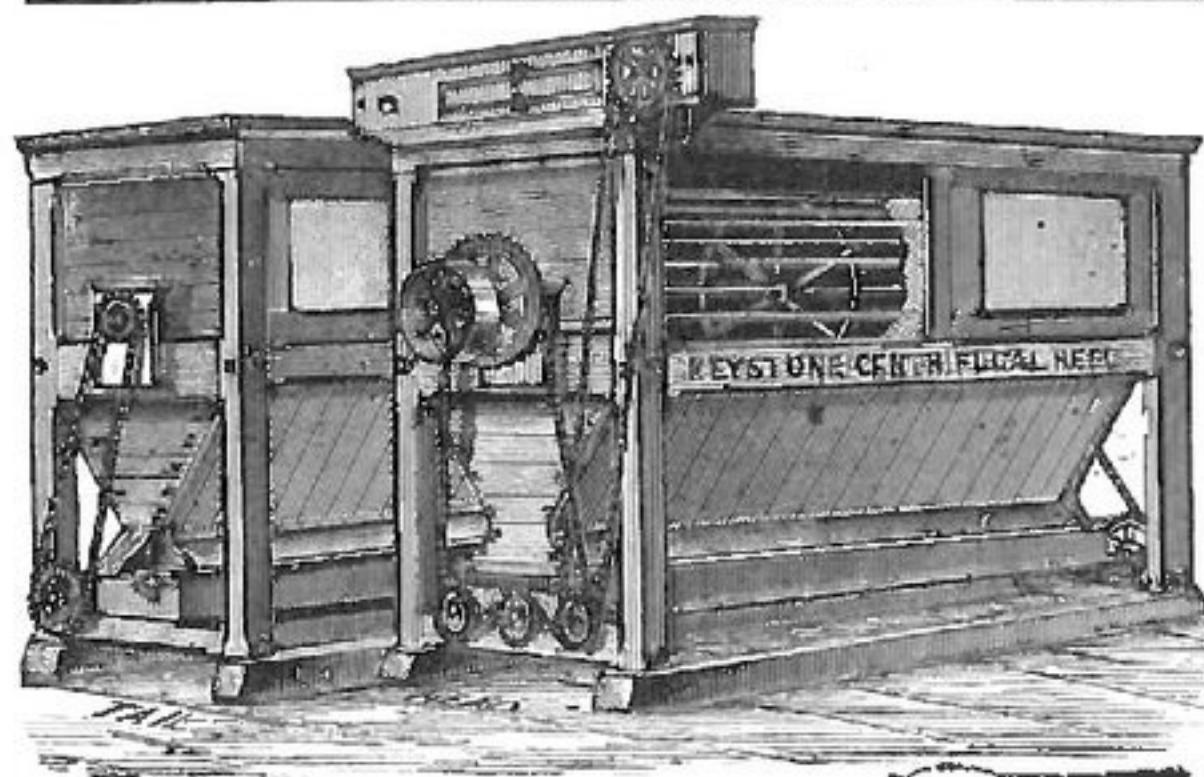
—] PATENTED MAY 6th, 1884. [—

Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling. The New Drag Feed Thoroughly Protects the Silk. Sent on Trial to any Responsible Miller.

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WE ARE THE SOLE OWNERS FOR THE UNITED STATES, OF ALL THE PATENTS UPON THIS ROLLER MILL.

*This Is the Only Roller Mill Made Having All the Essentials
Needed In Successful Milling.*

500 BARREL MILL IN MISSOURI.

Read what an Old Miller who has Thirty-Four Pairs of these Rolls in Constant Use, Says:

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Gentlemen: In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 33 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfecting of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

Yours, etc.,

R. H. FAUCETT, PRES.

500 BARREL MILL IN ILLINOIS.

OFFICE OF DAVID SUPPIGER & CO.,
HIGHLAND, ILL., Jan. 10, 1884.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gen's: We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.

Yours respectfully,

DAVID SUPPIGER & CO.

125 BARREL MILL IN INDIANA.

LAPEL, MADISON COUNTY, IND., Jan. 10, 1884.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen: The 125 barrel All Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill-furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantees. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.

Yours truly,

J. T. FORD.

Letters on file in our office from a large number of small roller millers giving as favorable reports as above. A portion will be published as occasion demands.

SPECIAL MILLING DEPARTMENT! Mill Builders & Contractors--Guarantee Results

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.

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HAS BEEN ADOPTED AND IS

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in the country. It has been adopted only after protracted tests, and because it has fully and completely met every representation we have ever made for it. J. A. Christian & Co., of Minneapolis, say:

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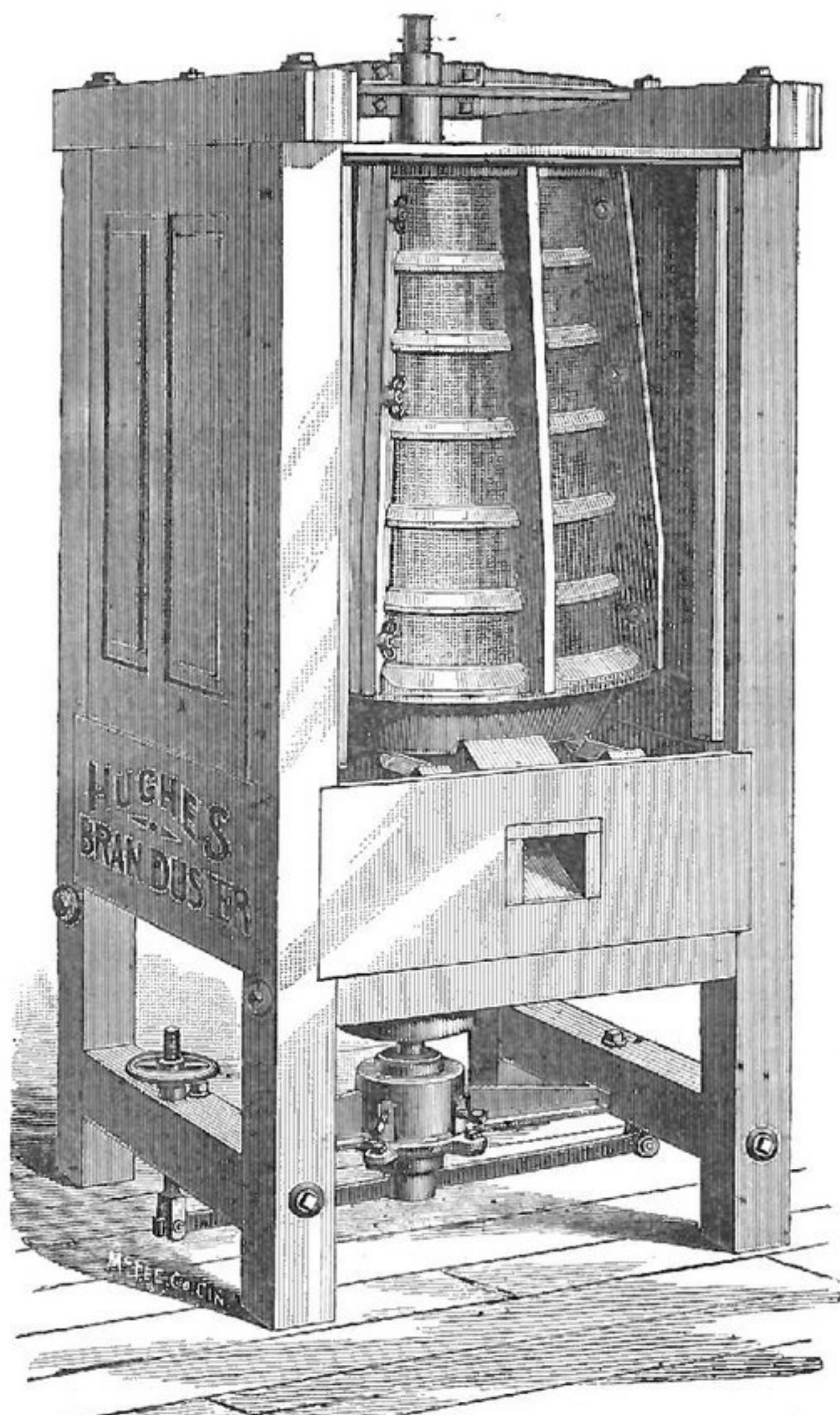
Starr & Co., the great millers of South Vallejo, Cal., are using five of our machines, and say:

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By using them for dusting the offal between the last two reductions, the product of low grade flour has been lessened from three to five per cent. We fully guarantee every machine we build to be *just as we represent it, and to do just what we say it will*. In buying of us you assume no risk, as we ask no pay until the machine has *fully demonstrated its capabilities*. Write for further information concerning machines, prices, terms, etc., etc., to



THE STEPHEN HUGHES MFG. CO., HAMILTON, OHIO.

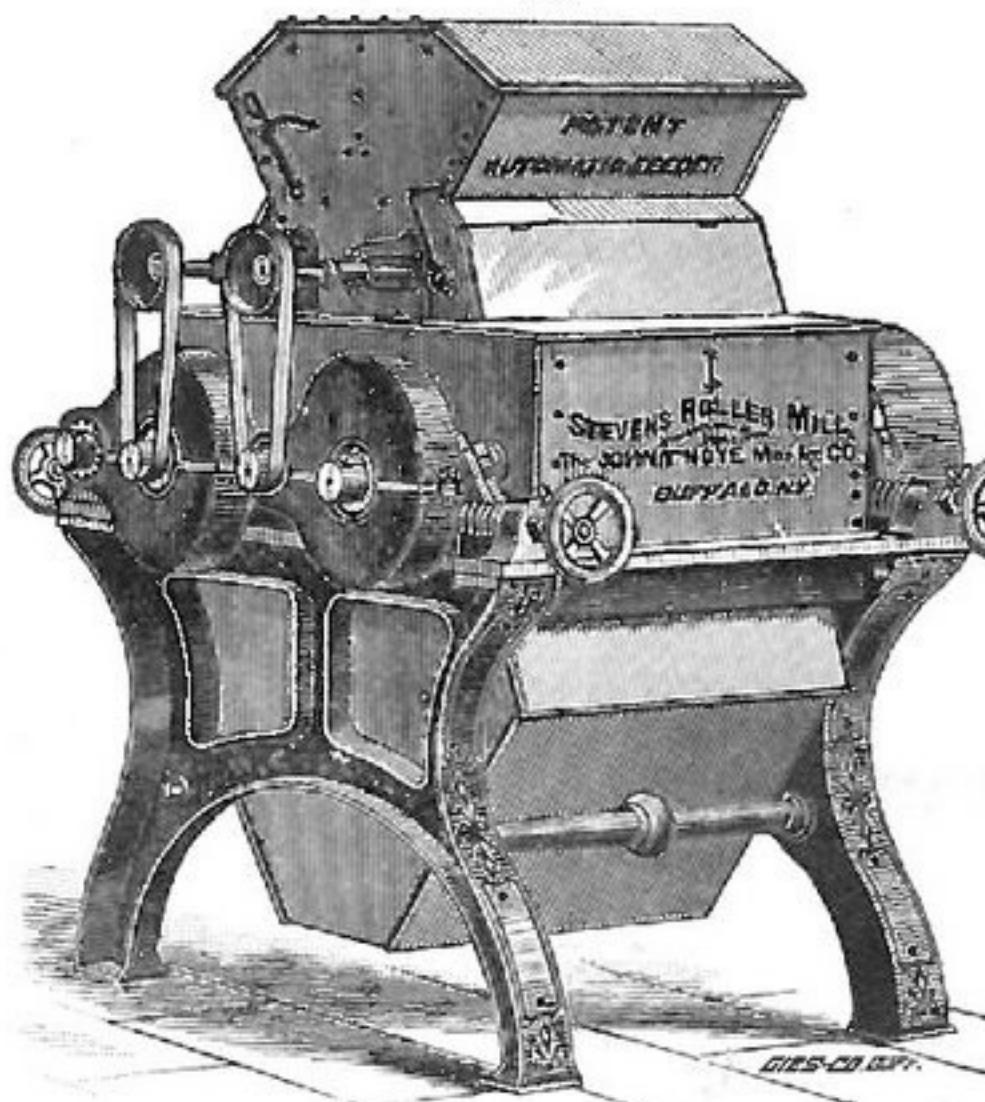
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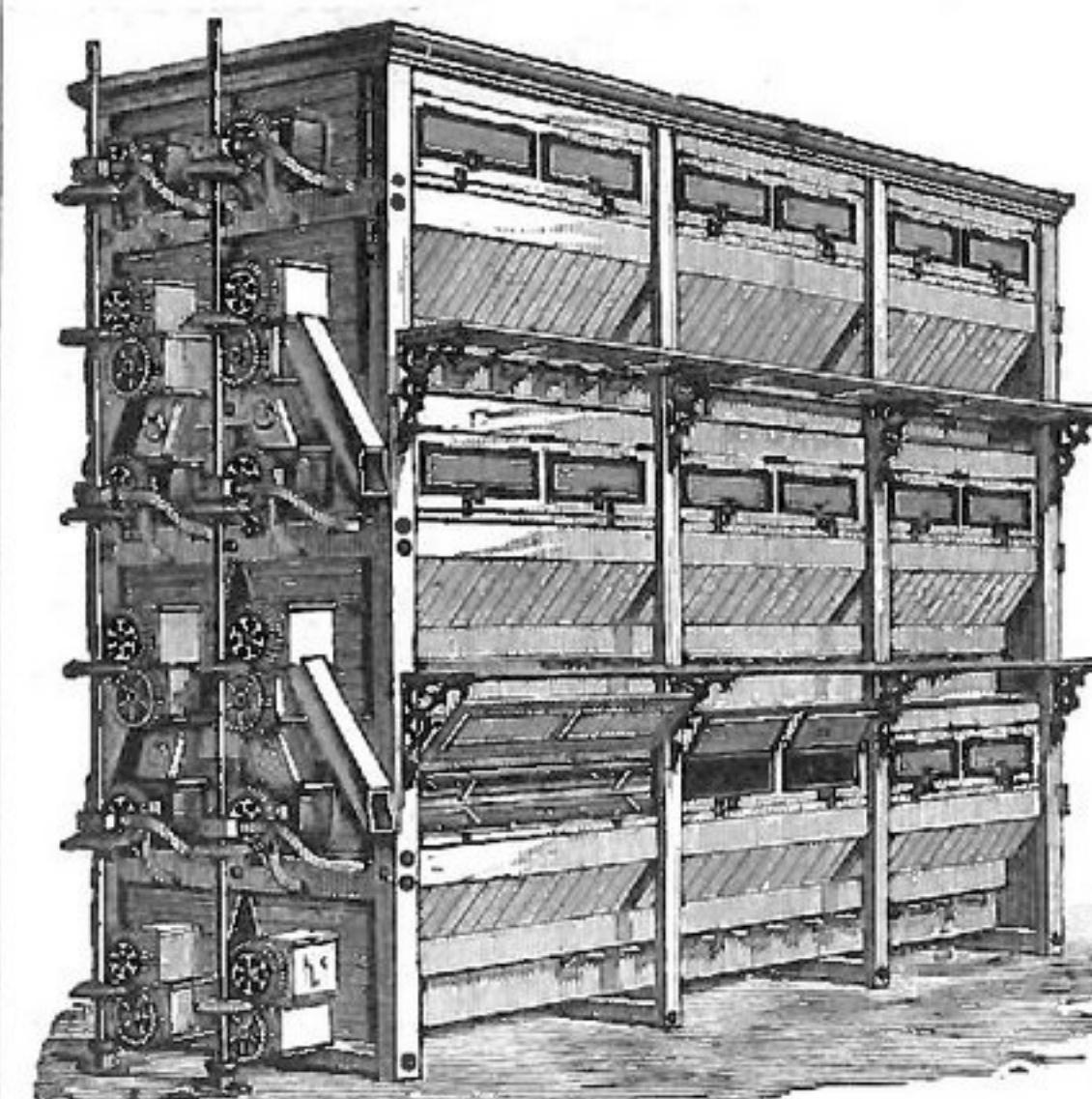
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